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**A REFERENCE ATMOSPHERE FOR
VANDENBERG AFB, CALIFORNIA
ANNUAL (1971 VERSION)**

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Aero-Astrodynamic Laboratory

May 10, 1971

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The reference atmosphere established by this study is based on the most current annual tabulation of thermodynamic quantities for Vandenberg Air Force Base, California. The report includes polynomial coefficients for each of the basic thermodynamic parameters of pressure, density, temperature, and virtual temperature. The coefficients define analytical expressions for each of these quantities so that they may be computed at any desired altitude. The coefficients result from a least squares fit of the respective parameters versus geometric altitude from 0 to 81,750 meters. The reference atmosphere is also extended to 700 km altitude by the technique given in the U. S. Standard Atmosphere, 1962, with latitude adjustments so that it is directly applicable to Vandenberg Air Force Base. Computed values of pressure, kinetic temperature, virtual temperature, molecular temperature, density, coefficient of viscosity, kinematic viscosity, speed of sound, molecular weight, pressure ratio, density ratio, viscosity ratio, and pressure difference are tabulated from 0 to 700 km altitude.

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LIST OF SYMBOLS

<u>Symbol</u>	<u>Definition</u>
c_s	speed of sound (m sec^{-1})
g	acceleration of gravity (m sec^{-2})
g_0	acceleration of gravity at sea level ($9.80665 \text{ m sec}^{-2}$)
L_k	kinetic temperature gradient dT/dZ ($^{\circ}\text{K m}^{-1}$)
L_m	molecular temperature gradient dT_m/dZ ($^{\circ}\text{K m}^{-1}$)
M	molecular weight of air (unitless)
M_0	molecular weight of air from 0 to 90 km altitude (28.9644)
P	pressure (newton cm^{-2})
P_0	sea level pressure (10.1899040 newtons cm^{-2})
PR	pressure ratio (percent)
PD	pressure difference (newton cm^{-2})
R^*	universal gas constant [$8.31436 \times 10^3 \text{ m}^2 \text{ sec}^{-2} (^{\circ}\text{K})^{-1}$]
$r' = 6346873$	function of latitude used to convert geopotential height to geometric altitude
$r^* = 6348794$	function of latitude used to convert geopotential height to geometric altitude
S	Sutherland's constant ($110.4 \text{ } ^{\circ}\text{K}$)
T	kinetic temperature ($^{\circ}\text{K}$)
T^*	virtual temperature ($^{\circ}\text{K}$)
T_m	molecular temperature ($^{\circ}\text{K}$)
Z	geometric altitude (m)
Φ	geopotential height ($\text{m}^2 \text{ sec}^{-2}$)
φ	latitude (degrees)

DEFINITION OF SYMBOLS (Continued)

<u>Symbol</u>	<u>Definition</u>
ρ	density (kg m^{-3})
ρ_R	density ratio (percent)
ρ_0	density at sea level ($1.236178 \text{ kg m}^{-3}$)
β	constant used in Sutherland's viscosity equation [$1.458 \times 10^{-6} \text{ kg sec}^{-1} \text{ m}^{-1} (\text{°K})^{-1/2}$]
μ	coefficient of viscosity (newtons sec m^{-2})
μ_0	coefficient of viscosity at sea level ($1.778415 \times 10^{-5} \text{ newton sec m}^{-2}$)
η	kinematic viscosity ($\text{m}^2 \text{ sec}^{-1}$)
γ	ratio of specific heat (1.40 unitless)
USS-62	U.S. Standard Atmosphere, 1962
VRA-71	a reference atmosphere for Vandenberg Air Force Base, California (defined to 90 km and extended to 700 km altitude)

TECHNICAL MEMORANDUM X-64590

A REFERENCE ATMOSPHERE FOR VANDENBERG AFB, CALIFORNIA,
ANNUAL (1971 VERSION)

SUMMARY

The reference atmosphere established by this study is based on the most current annual tabulation of thermodynamic quantities for Vandenberg Air Force Base, California. This report includes polynomial coefficients for each of the basic thermodynamic parameters of pressure, density, temperature, and virtual temperature. The coefficients define analytical expressions for each of these quantities so that they may be computed at any desired altitude. The coefficients result from a least squares fit of the respective parameters versus geometric altitude from 0 to 81,750 meters. The reference atmosphere is also extended to 700 km altitude by the technique given in the U.S. Standard Atmosphere, 1962, with latitude adjustments so that it is directly applicable to Vandenberg Air Force Base. Computed values of pressure, kinetic temperature, virtual temperature, molecular temperature, density, coefficient of viscosity, kinematic viscosity, speed of sound, molecular weight, pressure ratio, density ratio, viscosity ratio, and pressure difference are tabulated from 0 to 700 km altitude.

I. INTRODUCTION

It is important that atmospheric models be derived from the most reliable and current information. These models should be revised or updated as better information becomes available.

Early efforts were mainly concentrated on establishing and revising specific atmospheric models for the Cape Kennedy area, since this was the launch site for manned space flights. A reference atmosphere, based on annual median values of geopotential height, temperature, and relative humidity at standard pressure levels, was developed for Patrick Air Force Base, Florida in 1961 [1]. This atmosphere was revised by the Atlantic Missile Range Atmosphere for Cape Kennedy, Florida (IRIG 104-63) [2], and was later extended to 700 km [3]. This extension employed methods and basic data above 90 km from the U.S. Standard Atmosphere, 1962 [4].

Requirements for reference atmospheres at various other locations have arisen in recent years. Among other purposes, it is important to determine the effect of certain thermodynamic constraints imposed by the atmosphere at a variety of locations on a particular space vehicle. This document presents the most current annual reference atmosphere for Vandenberg Air Force Base, California (VRA-71). The atmosphere is defined to 90 km altitude and extended to 700 km. Parameters are defined using methods similar to those described in reference 3. The extension to 700 km employs techniques given in the U.S. Standard Atmosphere, 1962 [4].

II. DETERMINATION OF A REFERENCE ATMOSPHERE FOR VANDEBERG AIR FORCE BASE, CALIFORNIA

A. Definition

The reference atmosphere established by this report is defined by computed values of pressure, kinetic temperature, virtual temperature, molecular temperature, density, coefficient of viscosity, kinematic viscosity, speed of sound, molecular weight, pressure ratio, density ratio, viscosity ratio, and pressure difference. In general, these parameters are tabulated for each 250-meter interval from 0 to 90 km altitude, each 1,000-meter interval from 90 to 300 km altitude, and each 2,000-meter interval from 300 to 700 km altitude. However, kinematic viscosity and kinetic temperature are computed from 0 to 90 km altitude only, virtual temperature becomes the same as kinetic temperature above the moisture layer (9,950 meters altitude), and molecular temperature is computed from 90 to 700 km altitude.

B. Procedure

1. Basic Data

The basic data used in deriving this atmosphere are taken from reference 5, which is Part I of the Inter-Range Instrumentation Group Reference Atmosphere for Point Arguello, California (launch site - Vandenberg Air Force Base), and from reference 6, which is a preliminary document extending that atmosphere to 90 km.

2. Curve-Fitting Technique

Values of pressure, density, temperature and virtual temperature are taken from the two reports and subjected to a least-squares curve-fit procedure versus geometric altitude from 0 to 81,750 meters,

the altitude at which the fitted temperature profile intersects the U.S. Standard Atmosphere, 1962. The coefficients generated by this method define a fifth-degree polynomial as a function of altitude for each thermodynamic quantity subjected to a curve fit. Using the appropriate polynomial, values of pressure, virtual temperature, kinetic temperature, and density can be computed at any desired altitude. For purposes of this report, tabulated values (Table II) are given only at discrete altitudes, as described in (A) above.

Both kinetic temperature and virtual temperature result from simple curve fits of the quantity versus altitude (see equations (11) and (12) below). Since pressure and density vary logarithmically with height, a slightly different procedure was used in deriving coefficients for these parameters. Instead of curve-fitting linear functions of pressure and density, the quantities

$$\ln \frac{P}{P_1} \quad \text{and} \quad \ln \frac{\rho}{\rho_1}$$

were curve-fitted as a function of geometric altitude. (Here, P_1 and ρ_1 are, respectively, 1,000 mb and the density at that level.) Therefore, the expression defining these quantities are exponential functions of the polynomial (see equations (1) and (6) below).

In performing the curve fits, each curve is broken into five legs and coefficients are derived for each leg. Therefore, these derived coefficients, as listed in Table I, are neither the same from equation to equation nor from leg to leg. In keeping with the procedures of reference 3, no coefficients are given for virtual temperature or density above the third leg (28,250 meters). Density is computed above this level via the equation of state.

3. Extension of the Atmosphere and Latitudinal Adjustments

This reference atmosphere is extended to 700 km altitude by integration of basic data from the U.S. Standard Atmosphere, 1962. This extension begins at 81,750 meters and assumes an isothermal profile to 90,000 meters. In the region from 90,000 to 700,000 meters, linear segments of molecular temperature versus altitude are defined by the gradients given in the U.S. Standard Atmosphere, 1962.

The pressure values above 81,750 meters are computed by integration of the hydrostatic equation with proper latitude adjustments. If g_ϕ is the actual acceleration of gravity at mean sea level at latitude ϕ , the geopotential height Φ [7] is given by

$$\Phi = \frac{Zr'}{Z+r^*} ,$$

where

$$r^* = \frac{2g_\phi}{-(\partial g/\partial Z)_{Z=0}} ,$$

$$-(\partial g/\partial Z)_{Z=0} = 3.085462 \times 10^{-6} + 2.27 \times 10^{-9} \cos 2\phi - 2 \times 10^{-12} \cos 4\phi,$$

and

$$r' = \frac{g_\phi r^*}{9.8} .$$

Thus, latitude adjustments for Vandenberg are incorporated into the pressure equation by using the appropriate values of r^* and r' for that location (see equations (2) and (4)).

4. Derived Thermodynamic Quantities

The following section explains the final computation of thermodynamic quantities listed in Table II. Analytical equations are presented when applicable. Derived values of the coefficients ($A_0 \dots A_5$) are given in Table I.

a. Pressure

(1) Altitude Region: 0 to 81,750 meters

$$P = P_1 \exp(A_0 + A_1Z + A_2Z^2 + A_3Z^3 + A_4Z^4 + A_5Z^5) \quad (1)$$

where

$$P_1 = 10.0 \text{ newtons cm}^{-2} .$$

(2) Altitude Region: 81,750 to 90,000 meters

(a) Analytical Equation

$$P = P_b \exp \left[\frac{-g_o M_o r' r^* (Z - Z_b)}{R^* T_b (r^* + Z)(r^* + Z_b)} \right]. \quad (2)$$

(b) Computational Equation

$$P = P_b \exp \left[\frac{-1.376598941 \times 10^{12} (Z - Z_b)}{T_b (6348794 + Z)(6348794 + Z_b)} \right] \quad (3)$$

where

P_b = pressure at base

T_b = kinetic temperature at base

Z_b = geometric altitude at base.

(3) Altitude Region: 90,000 to 700,000 meters

(a) Analytical Equation for $L_m \neq 0$

$$\ln P = \ln P_b + \left[\frac{g_o M_o r' r^*}{L_m R^* (r^* + Z)(r^* + Z_b)} \right] \ln \left[\frac{T_{mb}}{T_{mb} + L_m (Z - Z_b)} \right]. \quad (4)$$

(b) Computational Equation for $L_m \neq 0$

$$\ln P = \ln P_b + \left[\frac{1.376598941 \times 10^{12}}{L_m (6348794 + Z)(6348794 + Z_b)} \right] \ln \left[\frac{T_{mb}}{T_{mb} + L_m (Z - Z_b)} \right], \quad (5)$$

where T_{mb} equals molecular temperature at base. If L_m equals zero, the analytical equation is the same as equation (2), and the computational equation is the same as equation (3). In this altitude region, however, molecular temperature (T_{mb}) is used instead of kinetic temperature (T_b).

b. Density

(1) Altitude Region: 0 to 28,250 meters

$$\rho = \rho_1 \exp(A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5), \quad (6)$$

where

ρ_1 = density at the 1000 mb level (1.2172 kg m^{-3}).

(2) Altitude Region: 28,250 to 700,000 meters

(a) Analytical Equation

$$\rho = \frac{10^4 M_o P}{R^* T_n}. \quad (7)$$

(b) Computational Equation

$$\rho = (0.3483676 \times 10^2) \frac{P}{T_n} \quad (8)$$

where

T_n = T from 28,250 to 90,000 meters altitude

$T_n = T_m$ from 90,000 to 700,000 meters altitude.

c. Density Ratio

Altitude Region: 0 to 700,000 meters

$$\rho R = \rho / \rho_o. \quad (9)$$

d. Pressure Ratio

Altitude Region: 0 to 700,000 meters

$$P R = P / P_o. \quad (10)$$

e. Virtual Temperature

Altitude Region: 0 to 9,950 meters

$$T^* = A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5. \quad (11)$$

Virtual temperature is the same as kinetic temperature above 9,950 meters altitude.

f. Kinetic Temperature

(1) Altitude Region: 0 to 81,750 meters

$$T = A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5. \quad (12)$$

(2) Altitude Region: 81,750 to 90,000 meters

$$T = T_b + L_k (Z - Z_b), \quad (13)$$

where

T_b = kinetic temperature at base.

(3) Altitude Region: 90,000 to 700,000 meters

$$T = \frac{M T_m}{M_0} . \quad (14)$$

g. Molecular Temperature

(1) Altitude Region: 0 to 90,000 meters

The molecular temperature is equal to the kinetic temperature in this altitude region, as the molecular weight is considered to be of the constant value M_0 .

(2) Altitude Region: 90,000 to 700,000

$$T_m = T_{mb} + L_m (Z - Z_b), \quad (15)$$

where

T_{mb} = molecular temperature at base

Z_b = geometric height at base.

h. Coefficient of Viscosity

Altitude Region: 0 to 700,000 meters

(a) Analytical Equation

$$\mu = \frac{\beta(T_n)^{3/2}}{T_n + S} . \quad (16)$$

(b) Computational Equation

$$\mu = \frac{1.458 \times 10^{-6} (T_n)^{3/2}}{T_n + 110.4} , \quad (17)$$

where

T_n = T from 0 to 90,000 meters altitude

T_n = T_m from 90,000 to 700,000 meters altitude.

i. Kinematic Viscosity

(1) Altitude Region: 0 to 90,000 meters

$$\eta = \mu/\rho. \quad (18)$$

(2) Altitude Region: 90,000 to 700,000 meters

Kinematic viscosity is not computed above 90,000 meters altitude.

j. Viscosity Ratio

Altitude Region: 0 to 700,000 meters

$$\mu_R = \mu / \mu_0. \quad (19)$$

k. Speed of Sound

Altitude Region: 0 to 700,000 meters

(a) Analytical Equation

$$c_s = \left[\frac{\gamma R^* T_n}{M_0} \right]^{1/2}. \quad (20)$$

(b) Computational Equation

$$c_s = 20.046707 (T_n)^{1/2} \quad (21)$$

where

$$T_n = T^* \text{ from 0 to 9,950 meters altitude}$$

$$T_n = T \text{ from 9,950 to 90,000 meters altitude}$$

$$T_n = T_m \text{ from 90,000 to 700,000 meters altitude.}$$

l. Pressure Difference

Altitude Region: 0 to 700,000 meters

$$PD = P_0 - P. \quad (22)$$

m. Molecular Weight

(1) Altitude Region: 0 to 90,000 meters

Molecular weight is taken to be of constant value (28.9644) below 90,000 meters altitude.

(2) Altitude Region: 90,000 to 700,000 meters

$$M = M_b + \Delta M (Z - Z_b), \quad (23)$$

where

M_b = molecular weight at base

ΔM = molecular weight gradient

Z_b = geometric altitude at base.

5. Computer Subroutine

The computer subroutine used in the development of this report is essentially the PRA-63 program. The only modifications were the substitution of certain constants and input data applicable to Vandenberg Air Force Base. As modified for this report, the VRA-71 subroutine has the capability of generating the most current thermodynamic quantities for Vandenberg and may be considered to be the best representation of annual atmospheric conditions at that location from the surface to 700 km altitude. Both the VRA-71 and PRA-63 computer subroutines are available and may be obtained by contacting the Aerospace Environment Division, MSFC.

III. U.S. STANDARD ATMOSPHERE, 1962 COMPARISON

A. Comparison of Temperature Profiles

Some differences will be noted in the Vandenberg temperature profile and that of the U.S. Standard Atmosphere, 1962 (see figure 1). The Vandenberg temperatures are warmer through most of the troposphere, but become colder in the lower stratosphere. In the middle and upper stratosphere, the Vandenberg profile is again warmer. Both profiles assume about the same temperatures at the stratopause (about 50 km). The U.S. Standard Atmosphere, 1962 is usually considered representative of mean conditions at 45°N latitude. The Vandenberg curve correctly depicts a profile for a location slightly southward.

B. Absolute Differences

The absolute pressure, temperature, and density differences between the atmosphere defined by this report and the U.S. Standard Atmosphere, 1962 (see figure 2), are computed for each km altitude by the following equations:

$$\Delta T = T_R - T_S \quad (24)$$

$$\Delta P = P_R - P_S \quad (25)$$

$$\Delta \rho = \rho_R - \rho_S, \quad (26)$$

where the subscript "R" denotes parameters from the atmosphere defined by this report and "S" denotes parameters from the U.S. Standard Atmosphere, 1962. The temperature deviations reflect those features noted in figure 1. Pressure differences are greatest in the middle and upper troposphere, and are generally in phase with temperature differences to about 20 km. Density deviations are large and negative in the lower troposphere, but reach a maximum positive value at about 13 km.

C. Relative Comparison

The wide range of values assumed by the thermodynamic parameters makes it necessary to compute relative comparisons. Such a computation affords a more satisfactory depiction of deviations in the higher altitudes where pressure and density values are small. The relative differences between temperature, pressure, and density values from the atmosphere defined by this report and the U.S. Standard Atmosphere, 1962, are computed as follows:

$$\Delta T_{rel} = \frac{T_R - T_S}{T_S} \times 100 \quad (27)$$

$$\Delta P_{rel} = \frac{P_R - P_S}{P_S} \times 100 \quad (28)$$

$$\Delta \rho_{rel} = \frac{\rho_R - \rho_S}{\rho_S} \times 100 \quad (29)$$

where the subscript "R" denotes parameters from the Vandenberg Atmosphere and "S" denotes parameters from the U.S. Standard Atmosphere, 1962.

These relative differences, illustrated in figure 3, are related by the following equations:

$$\Delta T_{\text{rel}} = \frac{\Delta P_{\text{rel}} - \Delta \rho_{\text{rel}}}{1 + \left(\frac{\Delta \rho_{\text{rel}}}{100} \right)} \quad (30)$$

$$\Delta P_{\text{rel}} = \Delta T_{\text{rel}} + \Delta \rho_{\text{rel}} + \Delta \rho_{\text{rel}} \left(\frac{\Delta T_{\text{rel}}}{100} \right) \quad (31)$$

$$\Delta \rho_{\text{rel}} = \frac{\Delta P_{\text{rel}} - \Delta T_{\text{rel}}}{\left(\frac{\Delta T_{\text{rel}}}{100} + 1 \right)} . \quad (32)$$

These relations can be derived from the equation of state. As can be seen from equation (30), ΔT_{rel} is equal to ΔP_{rel} if $\Delta \rho_{\text{rel}}$ is zero. Equation (31) states that ΔP_{rel} is equal to $\Delta \rho_{\text{rel}}$ if ΔT_{rel} is zero. This is illustrated in figure 3. It may also be noted in figure 3 that maximum relative pressure differences occur with increasing altitude as the corresponding relative temperature differences approach zero from positive values. Conversely, minimum relative pressure differences occur as the corresponding temperature differences approach zero from negative values. These trends support the validity of the hydrostatic relation for this atmosphere.

IV. CONCLUSIONS

The atmosphere defined by this report provides a consistent set of thermodynamic parameters representative of conditions over Vandenberg Air Force Base, California. It is defined to 90 km altitude and extended to 700 km altitude. The results are subject to future revisions

as more frequent and accurate measurements are combined with continuing improvements in data reduction. Increasingly accurate representations of thermodynamic variability at all locations will also come from improved knowledge of dynamic processes in the upper atmosphere.

The results presented here are the most complete and current annual tabulations of thermodynamic quantities for the Vandenberg launch area. It is recommended that this reference atmosphere be used in missile and space vehicle design, performance, and trajectory studies regarding the Western Test Range, Vandenberg Air Force Base, California.

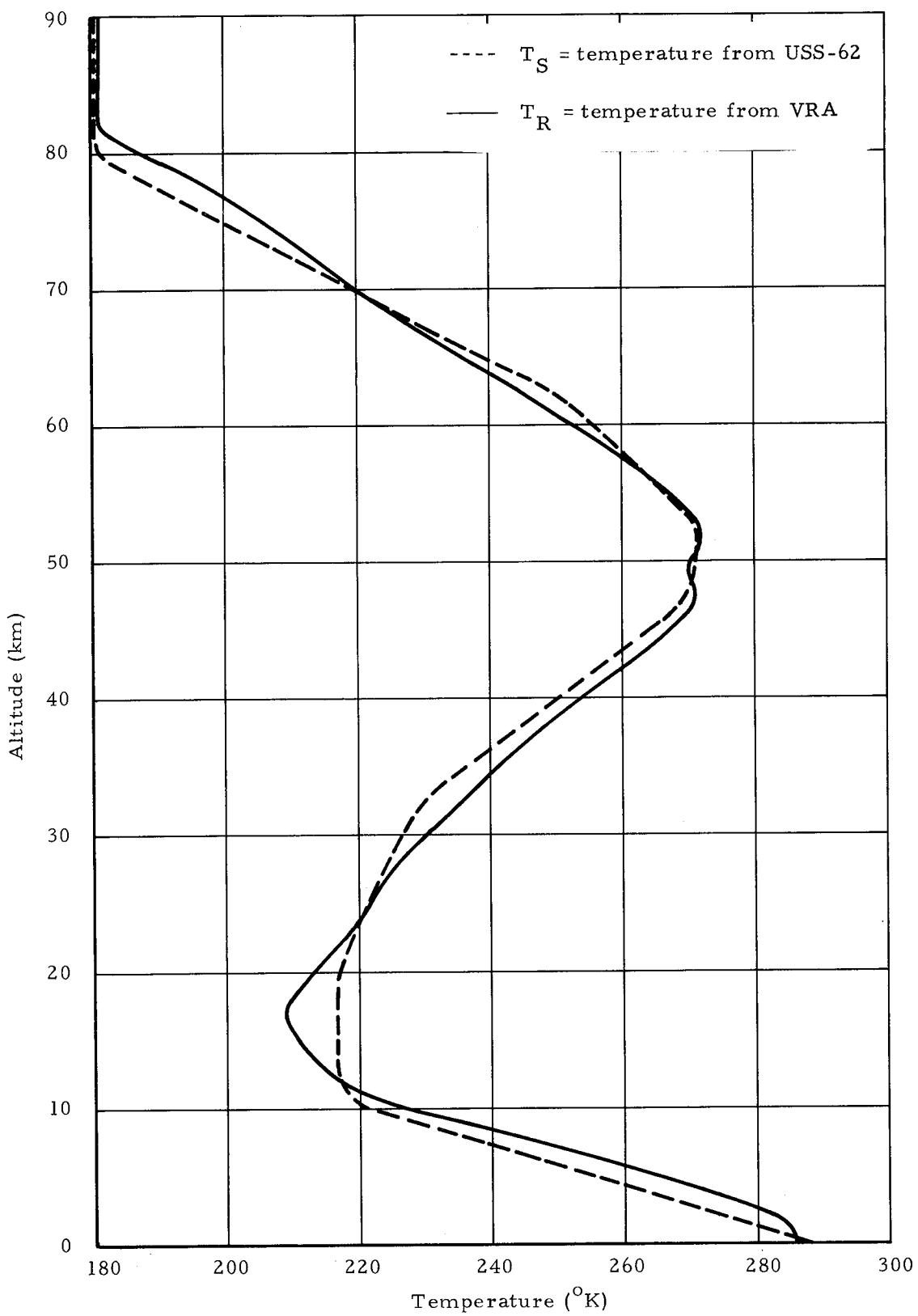


Fig. 1. Comparison of U. S. Standard Atmosphere, 1962 and Vandenberg Air Force Base Reference Atmosphere Temperature Profiles.

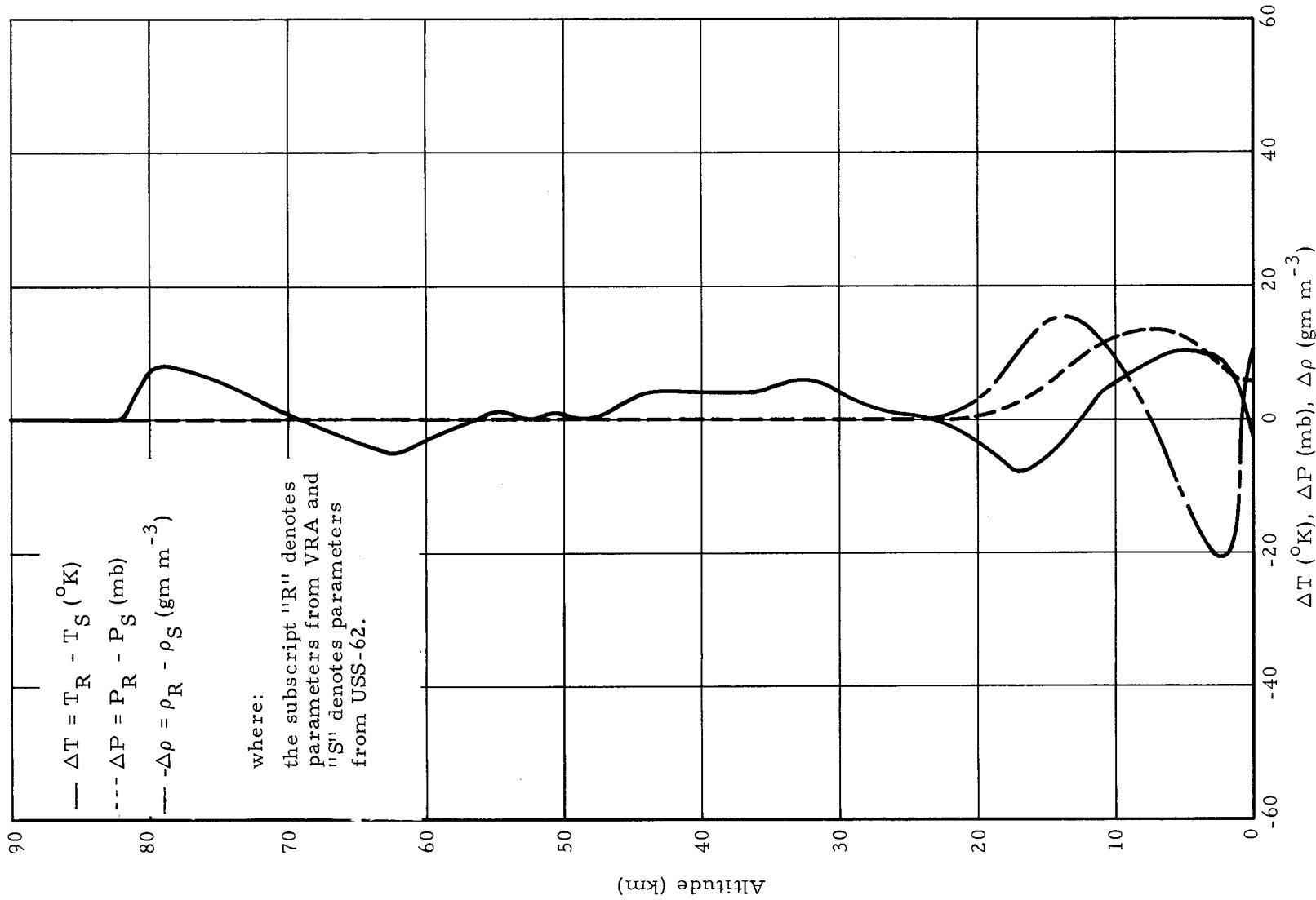


Fig. 2. Absolute Difference Between Thermodynamic Quantities of the Vandenberg Air Force Base Reference Atmosphere and the U. S. Standard Atmosphere, 1962, Versus Geometric Altitude.

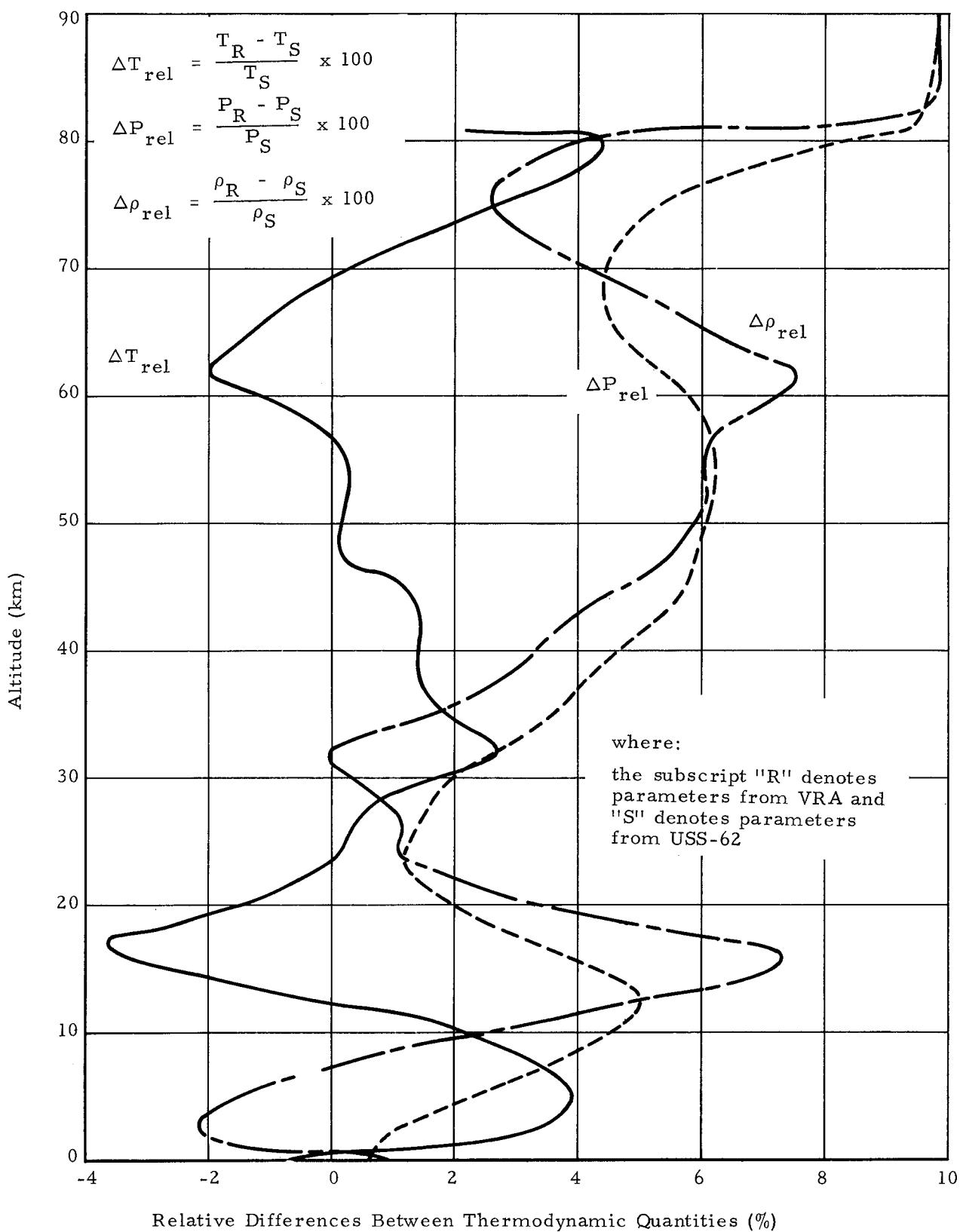


Fig. 3. Relative Differences Between Thermodynamic Quantities of the Vandenberg Air Force Base Reference Atmosphere and the U.S. Standard Atmosphere Versus Geometric Altitude.

Table 1. DERIVED COEFFICIENTS FOR EMPIRICAL POLYNOMIALS

Leg I							
	$0 \leq Z < 9950$ meters						
Parameters	A_0	A_1	A_2	A_3	A_4	A_5	Equation
Pressure	1.8812367×10^{-2}	$-1.1845111 \times 10^{-4}$	$-3.5545155 \times 10^{-10}$	$-6.5016675 \times 10^{-14}$	$-5.2355006 \times 10^{-18}$	$3.4885003 \times 10^{-22}$	(1)
Density	1.5470847×10^{-2}	$-1.2568957 \times 10^{-4}$	8.8865136×10^{-9}	$-1.5579407 \times 10^{-12}$	$1.2916496 \times 10^{-16}$	$-4.3994795 \times 10^{-21}$	(6)
Temperature	2.8588177×10^2	3.1763281×10^{-3}	$-3.1118251 \times 10^{-6}$	$5.2518793 \times 10^{-10}$	$-4.6448685 \times 10^{-14}$	$1.6145641 \times 10^{-18}$	(12)
Virtual Temp.	2.8715277×10^2	2.1517327×10^{-3}	$-2.7196694 \times 10^{-6}$	$4.5126345 \times 10^{-10}$	$-3.9876511 \times 10^{-14}$	$1.3941650 \times 10^{-18}$	(11)
Leg II							
	$9950 \leq Z < 18040$ meters						
Parameters	A_0	A_1	A_2	A_3	A_4	A_5	Equation
Pressure	7.5926341×10^{-2}	$-1.3107406 \times 10^{-4}$	1.4637277×10^{-9}	$-3.1016812 \times 10^{-13}$	$1.3256585 \times 10^{-17}$	$-1.7447999 \times 10^{-22}$	(1)
Density	-1.8048718×10^0	3.1917064×10^{-4}	$-2.3142097 \times 10^{-8}$	$-1.1163903 \times 10^{-12}$	$1.2861068 \times 10^{-16}$	$-3.0063455 \times 10^{-21}$	(6)
Temperature	6.6695824×10^2	$-8.6067580 \times 10^{-2}$	3.0132231×10^{-6}	$3.8218058 \times 10^{-10}$	$-3.3634352 \times 10^{-14}$	$7.5058913 \times 10^{-19}$	(12)
Virtual Temp.	6.6695824×10^2	$-8.6067580 \times 10^{-2}$	3.0132231×10^{-6}	$3.8218058 \times 10^{-10}$	$-3.3634352 \times 10^{-14}$	$7.5058913 \times 10^{-19}$	(11)
Leg III							
	$18040 \leq Z < 28250$ meters						
Parameters	A_0	A_1	A_2	A_3	A_4	A_5	Equation
Pressure	-1.51119643×10^0	6.4840176×10^{-5}	$-2.6797416 \times 10^{-9}$	$-6.7408841 \times 10^{-13}$	$3.2442591 \times 10^{-17}$	$-4.3323941 \times 10^{-22}$	(1)
Density	-2.6647834×10^0	2.6811921×10^{-4}	$-8.3362456 \times 10^{-9}$	$-9.9651556 \times 10^{-13}$	$5.1729970 \times 10^{-17}$	$-7.0315170 \times 10^{-22}$	(6)
Temperature	6.6447200×10^2	$-5.5557022 \times 10^{-2}$	5.6912588×10^{-7}	$1.7131166 \times 10^{-10}$	$-7.9541590 \times 10^{-15}$	$1.0455683 \times 10^{-19}$	(12)
Virtual Temp.	6.6447200×10^2	$-5.5557022 \times 10^{-2}$	5.6912588×10^{-7}	$1.7131166 \times 10^{-10}$	$-7.9541590 \times 10^{-15}$	$1.0455683 \times 10^{-19}$	(11)
Leg IV							
	$28250 \leq Z < 49065$ meters						
Parameters	A_0	A_1	A_2	A_3	A_4	A_5	Equation
Pressure	$-5.0774336 \times 10^{-2}$	$-1.3229173 \times 10^{-4}$	$-3.3047358 \times 10^{-10}$	$-2.8081769 \times 10^{-14}$	$1.1235247 \times 10^{-18}$	$-9.9039449 \times 10^{-24}$	(1)
Temperature	-3.1441590×10^2	4.4022912×10^{-2}	$-8.4909942 \times 10^{-7}$	$-1.8977607 \times 10^{-11}$	$8.5503680 \times 10^{-16}$	$-7.8943270 \times 10^{-21}$	(12)
Leg V							
	$49065 \leq Z < 81750$ meters						
Parameters	A_0	A_1	A_2	A_3	A_4	A_5	Equation
Pressure	4.9682465×10^{-1}	$-2.0600983 \times 10^{-4}$	1.1167046×10^{-9}	$1.3301416 \times 10^{-14}$	$-3.5535259 \times 10^{-19}$	$1.5827238 \times 10^{-24}$	(1)
Temperature	-2.0223418×10^3	1.0809620×10^{-1}	$-1.1246815 \times 10^{-6}$	$-1.5919380 \times 10^{-11}$	$3.5857350 \times 10^{-16}$	$-1.7624631 \times 10^{-21}$	(12)

NOTES ON TABULAR VALUES IN TABLE II

The two-digit numbers that are preceded by the plus or minus sign indicate the power of 10 by which the respective principal value must be multiplied. For example, a tabular value indicated as:

2.8588177+02 is 285.88177

and

1.5663607-05 is .000015663607.

The density ratio and pressure difference at altitude $Z = 0$ do not assume the exact values of 1 or 0. This is due to round-off errors and computer conversion processes.

**TABLE II - VANDENBERG AFB REFERENCE ATMOSPHERE
VERSUS GEOMETRIC ALTITUDE (ANNUAL)**

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
0.	1.0189904+01	2.8588177+02	2.8715277+02	1.2361775+00	1.4386405-05	1.7784150-05	3.3970470+02
250.	9.8923470+00	2.8648939+02	2.8752762+02	1.1985748+00	1.4862289-05	1.7813565-05	3.3992635+02
500.	9.6029909+00	2.8675477+02	2.8760268+02	1.1632456+00	1.5324711-05	1.7826403-05	3.3997072+02
750.	9.3215617+00	2.8672066+02	2.8741484+02	1.1299101+00	1.5775382-05	1.7824763-05	3.3985968+02
1000.	9.0477941+00	2.8642562+02	2.8697611+02	1.0983266+00	1.6216058-05	1.7810528-05	3.3961291+02
1250.	8.7814318+00	2.8593724+02	2.8638123+02	1.0682868+00	1.6648510-05	1.7785384-05	3.3924802+02
1500.	8.5222274+00	2.8519428+02	2.8559284+02	1.0396111+00	1.7074493-05	1.7750833-05	3.3878074+02
1750.	8.2699430+00	2.8431592+02	2.8465668+02	1.0121450+00	1.7495724-05	1.7708209-05	3.3822503+02
2000.	8.0243502+00	2.8329711+02	2.8359425+02	9.8575564-01	1.7913862-05	1.7658691-05	3.3759326+02
2250.	7.7852300+00	2.8215979+02	2.8242442+02	9.6032948-01	1.8330492-05	1.7603312-05	3.3689624+02
2500.	7.5523727+00	2.8292301+02	2.8116363+02	9.3576941-01	1.8747107-05	1.7542969-05	3.3614343+02
2750.	7.3255783+00	2.7982608+02	2.7982608+02	9.1199280-01	1.9165104-05	1.7478437-05	3.3534293+02
3000.	7.1046558+00	2.7821440+02	2.7842384+02	8.8892961-01	1.9585771-05	1.7410372-05	3.3450165+02
3250.	6.8894233+00	2.7676821+02	2.7696706+02	8.6652073-01	2.0010280-05	1.7339323-05	3.3362540+02
3500.	6.6797081+00	2.7527948+02	2.7546408+02	8.4471642-01	2.0439693-05	1.7265744-05	3.3271895+02
3750.	6.4753458+00	2.7374033+02	2.7392165+02	8.2347506-01	2.0874945-05	1.7189996-05	3.3178614+02
4000.	6.2761809+00	2.7217236+02	2.7234509+02	8.0276189-01	2.1316859-05	1.7112362-05	3.3082996+02
4250.	6.0820661+00	2.7057484+02	2.7073838+02	7.8254802-01	2.1766137-05	1.7033048-05	3.2985264+02
4500.	5.8922861+00	2.6895100+02	2.6910441+02	7.6280938-01	2.2223374-05	1.6952198-05	3.2885576+02
4750.	5.7084365+00	2.6730261+02	2.6744510+02	7.4352594-01	2.2689057-05	1.6869903-05	3.2784033+02
5000.	5.52826658+00	2.6563136+02	2.6576157+02	7.2468098-01	2.3163579-05	1.6786203-05	3.2680685+02
5250.	5.3534321+00	2.6393697+02	2.6405433+02	7.0625996-01	2.3647245-05	1.6701102-05	3.2575546+02
5500.	5.1826251+00	2.6221941+02	2.6232337+02	6.8825086-01	2.4190292-05	1.6614577-05	3.2468599+02
5750.	5.0161405+00	2.6047832+02	2.6056842+02	6.7064270-01	2.4642901-05	1.6526582-05	3.2359808+02
6000.	4.8538800+00	2.5871198+02	2.5878904+02	6.5342553-01	2.5155218-05	1.6437062-05	3.2249129+02
6250.	4.6957514+00	2.5692048+02	2.5698482+02	6.3658970-01	2.5677380-05	1.6345961-05	3.2136515+02
6500.	4.5416673+00	2.5510286+02	2.5515553+02	6.2012655-01	2.6209540-05	1.6253232-05	3.2021933+02
6750.	4.3915456+00	2.5325886+02	2.5330127+02	6.0402608-01	2.6751899-05	1.6158845-05	3.1905367+02
7000.	4.2453086+00	2.5139878+02	2.5142269+02	5.8827869-01	2.7304746-05	1.6062801-05	3.178835+02
7250.	4.1028832+00	2.4949368+02	2.4952106+02	5.7287399-01	2.7808495-05	1.5965136-05	3.1666397+02
7500.	3.9641998+00	2.4757559+02	2.4759854+02	5.5780031-01	2.8443735-05	1.5865939-05	3.1544169+02
7750.	3.8291924+00	2.4563751+02	2.4565825+02	5.4304708-01	2.9031298-05	1.5765356-05	3.1420329+02
8000.	3.6777986+00	2.4368403+02	2.4370449+02	5.2859970-01	2.9632266-05	1.5663607-05	3.1295134+02
8250.	3.5699584+00	2.4172135+02	2.4174285+02	5.1444454-01	3.0248140-05	1.5560991-05	3.1168929+02
8500.	3.4456147+00	2.3975626+02	2.3978051+02	5.0056633-01	3.0880827-05	1.5457902-05	3.1042164+02
8750.	3.3247124+00	2.3779918+02	2.3782613+02	4.8694867-01	3.1532769-05	1.5354840-05	3.0915401+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE RATIO unitless	DENSITY RATIO unitless	VISCOSITY RATIO unitless	MOLECULAR WEIGHT unitless	PRESSURE DIFFERENCE newtons cm ⁻²
0.	1.0000000+00	9.9999962-01	1.0000000+00	2.8964400+01	-2.3841858-07
250.	9.7079884-01	9.6958104-01	1.0016540+00		2.9755700-01
500.	9.4240248-01	9.4100169-01	1.0023759+00		5.8691311-01
750.	9.1478405-01	9.1403507-01	1.0022836+00		8.6834228-01
1000.	8.8791750-01	8.8848380-01	1.0014832+00		
1250.	8.6177767-01	8.6418327-01	1.0000649+00		1.1421099+00
1500.	8.3634030-01	8.4098820-01	9.9512657-01		1.4084722+00
1750.	8.1158203-01	8.1876759-01	9.9572986-01		1.6676766+00
2000.	7.8748044-01	7.9742209-01	9.9294545-01		1.9199610+00
2250.	7.6401407-01	7.7685372-01	9.8983150-01		2.1655538+00
2500.	7.4116230-01	7.5698598-01	9.8643844-01		2.4046741+00
2750.	7.1890552-01	7.3775201-01	9.8280978-01		2.6375313+00
3000.	6.9722500-01	7.1902515-01	9.7893247-01		2.8643256+00
3250.	6.7610286-01	7.0096760-01	9.7498743-01		3.0852482+00
3500.	6.5552218-01	6.8332911-01	9.7035011-01		3.3004807+00
3750.	6.3546681-01	6.6614602-01	9.6659083-01		3.5101960+00
4000.	6.1592149-01	6.4939021-01	9.5222545-01		3.7145582+00
4250.	5.9687177-01	6.3303830-01	9.5776362-01		3.9137231+00
4500.	5.7830396-01	6.1767082-01	9.6321947-01		4.1078379+00
4750.	5.6020513-01	6.0147159-01	9.6859202-01		4.2970421+00
5000.	5.4256308-01	5.8622696-01	9.4338556-01		4.4814675+00
5250.	5.2536629-01	5.7132545-01	9.3910039-01		4.6612382+00
5500.	5.0860392-01	5.5675709-01	9.3423569-01		4.8364719+00
5750.	4.9226572-01	5.4251305-01	9.2926714-01		5.0072789+00
6000.	4.7634207-01	5.2858531-01	9.2425344-01		5.1737635+00
6250.	4.6082391-01	5.1496620-01	9.1913083-01		5.3360240+00
6500.	4.4570266-01	5.0164827-01	9.1391669-01		5.4941525+00
6750.	4.3097026-01	4.8862387-01	9.0860935-01		5.6482366+00
7000.	4.1661910-01	4.7588510-01	9.0320878-01		5.7983584+00
7250.	4.0264199-01	4.6342354-01	8.9771712-01		5.9445953+00
7500.	3.8903210-01	4.5123018-01	8.9213927-01		6.0870208+00
7750.	3.7578297-01	4.3929521-01	8.8648353-01		6.2257043+00
8000.	3.6288446-01	4.2760308-01	8.8176218-01		6.3607116+00
8250.	3.5034269-01	4.1615734-01	8.7499207-01		6.4921055+00
8500.	3.3814005-01	4.0493462-01	8.6919544-01		6.6199456+00
8750.	3.2627514-01	3.9391469-01	8.6340027-01	2.8964400+01	6.7442894+00
					6.8651916+00

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE newtons cm ⁻²	KINETIC TEMPERATURE degrees K	VIRTUAL TEMPERATURE degrees K	DENSITY kg m ⁻³	KINEMATIC VISCOSITY m ² sec ⁻¹	COEFFICIENT OF VISCOSITY newton-sec m ⁻²	SPEED OF SOUND m sec ⁻¹
9000.	3.2071987+00	2.3586146+02	2.3589045+02	4.7357411-01	3.2207045-05	1.5252423-05	3.0789330+02
9250.	3.0930220+00	2.3395699+02	2.3398591+02	4.0042411-01	3.2907477-05	1.5151396-05	3.0664783+02
9500.	2.9821325+00	2.3210212+02	2.3212722+02	4.0747924+01	3.3638763-05	1.5052648-05	3.0542747+02
9750.	2.8744810+00	2.3031586+02	2.3033142+02	4.3471910-01	3.4406635-05	1.4957222-05	3.0424374+02
10000.	2.7706815+00	2.2850072+02	2.2850072+02	4.2242641-01	3.5177528-05	1.4859917-05	3.0303224+02
10250.	2.6680694+00	2.2657094+02	2.2657094+02	4.1027175-01	3.5966632-05	1.4756093-05	3.0174992+02
10500.	2.5687450+00	2.2484698+02	2.2484698+02	3.9803000-01	3.6838961-05	1.4663012-05	3.0059970+02
10750.	2.4726369+00	2.2330947+02	2.2330947+02	3.8576578-01	3.7794273-05	1.4579737-05	2.9957021+02
11000.	2.3796741+00	2.2193979+02	2.2193979+02	3.7353754-01	3.8832351-05	1.4505341-05	2.9865008+02
11250.	2.2897856+00	2.2071979+02	2.2071979+02	3.6139731-01	3.9952998-05	1.4438906-05	2.9782811+02
11500.	2.2029009+00	2.1963208+02	2.1963208+02	3.4939109-01	4.0115604-05	1.4379541-05	2.9709336+02
11750.	2.1189499+00	2.1866009+02	2.1866009+02	3.3755875-01	4.2441156-05	1.4326384-05	2.9643523+02
12000.	2.0378622+00	2.1773813+02	2.1778813+02	3.2573435-01	4.3808243-05	1.4278611-05	2.9584359+02
12250.	1.9595681+00	2.1700147+02	2.1700147+02	3.1454643-01	4.5257040-05	1.4235441-05	2.9530880+02
12500.	1.8839979+00	2.1628650+02	2.1628650+02	3.0341834-01	4.6787367-05	1.4196146-05	2.9482191+02
12750.	1.8110822+00	2.1563072+02	2.1563072+02	2.9258489-01	4.8391111-05	1.4160055-05	2.9437462+02
13000.	1.7407523+00	2.1502290+02	2.1502290+02	2.8201088-01	5.0092280-05	1.4126562-05	2.9395944+02
13250.	1.6729394+00	2.1445314+02	2.1445314+02	2.7175530-01	5.1866990-05	1.4095129-05	2.9356972+02
13500.	1.6075752+00	2.1391292+02	2.1391292+02	2.6180781-01	5.3723738-05	1.4065293-05	2.9319973+02
13750.	1.5445922+00	2.1339533+02	2.1339533+02	2.5217112-01	5.5663302-05	1.4036677-05	2.9284480+02
14000.	1.4839231+00	2.1289493+02	2.1289493+02	2.4284485-01	5.7686966-05	1.4008983-05	2.9250124+02
14250.	1.4255013+00	2.1240807+02	2.1240807+02	2.3382597-01	5.9796659-05	1.3982012-05	2.9216660+02
14500.	1.3592610+00	2.1193280+02	2.1193280+02	2.2510912-01	6.1995074-05	1.3955657-05	2.9183955+02
14750.	1.3151367+00	2.1146905+02	2.1146905+02	2.1668689-01	6.4285924-05	1.3929917-05	2.9152007+02
15000.	1.2630643+00	2.1101876+02	2.1101876+02	2.0855008-01	6.6674156-05	1.3904901-05	2.9120953+02
15250.	1.2129798+00	2.1058578+02	2.1058578+02	2.068808-01	6.9166167-05	1.3880825-05	2.9091042+02
15500.	1.1648208+00	2.1017622+02	2.1017622+02	1.9308901-01	7.1770177-05	1.3858033-05	2.9062759+02
15750.	1.1185252+00	2.0979829+02	2.0979829+02	1.8574007-01	7.4496492-05	1.3836983-05	2.9036617+02
16000.	1.0740324+00	2.0946258+02	2.0946258+02	1.7862758-01	7.7358000-05	1.3818273-05	2.89013377+02
16250.	1.0312825+00	2.0918206+02	2.0918206+02	1.7173747-01	8.0370511-05	1.3802628-05	2.8993942+02
16500.	9.9321667-01	2.0897209+02	2.0897209+02	1.6505515-01	8.3553360-05	1.3790912-05	2.8979387+02
16750.	9.5077749-01	2.0885070+02	2.0885070+02	1.5856594-01	8.6929996-05	1.3784137-05	2.8970969+02
17000.	9.1290847-01	2.0883855+02	2.0883855+02	1.5225517-01	9.0528671-05	1.3783458-05	2.8970126+02
17250.	8.7555424-01	2.0895901+02	2.0895901+02	1.4610826-01	9.4383317-05	1.3790182-05	2.8978481+02
17500.	8.4166088-01	2.0923825+02	2.0923825+02	1.4011111-01	9.8534390-05	1.3805762-05	2.8997836+02
17750.	8.0817544-01	2.0970546+02	2.0970546+02	1.3424996-01	1.0303028-04	1.3831811-05	2.9030193+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE	metres	unitless	unitless	unitless	newtons cm ⁻²
9000.	3.1474277-01	3.8309549-01	8.5764137-01	2.8964400-01	6.9827054-00	9750.	2.0209108-01	3.0516638-01	8.4104224-01	7.3154230+00
9250.	3.0353789-01	3.7249578-01	8.5196066-01	2.9265560-01	6.9840360-01	9500.	2.0277715-01	3.0619809-01	8.4104224-01	7.3154230+00
9500.	3.0353789-01	3.8309549-01	8.5764137-01	2.8964400-01	6.9827054-00	9750.	2.0209108-01	3.0516638-01	8.4104224-01	7.3154230+00
10000.	2.0190457-01	3.4171972-01	8.3557083-01	2.8964400-01	6.9827054-00	10250.	2.0183460-01	3.0318872-01	8.2973282-01	7.2518346+00
10500.	2.0183460-01	3.2508727-01	8.2192657-01	2.8964400-01	6.9827054-00	10750.	2.0183460-01	3.0215557-01	8.1981637-01	7.2172670+00
11000.	2.0153525-01	3.0212732-01	8.1563365-01	2.8964400-01	6.9827054-00	11250.	2.0247112-01	2.9232549-01	8.1189743-01	7.9001185+00
11500.	2.0161846-01	2.8264566-01	8.0333662-01	2.8964400-01	6.9827054-00	11750.	2.0161846-01	2.8264566-01	8.0333662-01	7.9370031+00
12000.	1.9998836-01	2.6366296-01	8.0293408-01	2.8964400-01	6.9827054-00	12250.	1.9230486-01	2.5494576-01	8.0033366-01	8.20303366+00
12500.	1.9176171-01	2.1981329-01	7.9433440-01	2.8964400-01	6.9827054-00	12750.	1.7773300-01	2.3667182-01	7.9621769-01	8.3788217+00
13000.	1.7083108-01	2.2813129-01	7.9433440-01	2.8964400-01	6.9827054-00	13250.	1.6917617-01	2.1981329-01	7.9433440-01	8.51694618+00
13500.	1.6917617-01	2.1981329-01	7.9433440-01	2.8964400-01	6.9827054-00	13750.	1.5158064-01	2.0399256-01	7.9328017-01	8.6453118+00
14000.	1.4562680-01	1.964412-01	7.8722292-01	2.8964400-01	6.9827054-00	14250.	1.3891525-01	1.891525-01	7.82026491-01	8.7444027+00
14500.	1.3891525-01	1.8210930-01	7.82026491-01	2.8964400-01	6.9827054-00	14750.	1.2906272-01	1.7528773-01	7.8322773-01	8.8747673+00
15000.	1.2813108-01	1.964412-01	7.8722292-01	2.8964400-01	6.9827054-00	15250.	1.1934951-01	1.6234951-01	7.8031664-01	8.9769242+00
15500.	1.1934951-01	1.6234951-01	7.8031664-01	2.8964400-01	6.9827054-00	15750.	1.0776112-01	1.591112-01	7.7235013-01	9.0250832+00
16000.	1.0540162-01	1.4494938-01	7.7499323-01	2.8964400-01	6.9827054-00	16250.	1.0120630-01	1.3892616-01	7.7611963-01	9.1586215+00
16500.	1.0120630-01	1.3892616-01	7.7611963-01	2.8964400-01	6.9827054-00	16750.	9.1726251-01	1.3352553-01	7.7508083-01	9.1996874+00
17000.	8.9589506-02	1.2316606-01	7.7594171-01	2.8964400-01	6.9827054-00	17250.	8.6621934-02	1.1814555-01	7.751981-01	9.3133493+00
17500.	8.6621934-02	1.1814555-01	7.751981-01	2.8964400-01	6.9827054-00	17750.	7.9311389-02	1.0680383-01	7.7776057-01	9.3817285+00

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
18000.	7.7604645e-01	2.1039268e+02	2.1039268e+02	1.2851184e-01	1.0792843e-04	1.3870081e-05	2.9077721e+02
18250.	7.4516521e-01	2.1072380e+02	2.1072380e+02	1.2321339e-01	1.1271910e-04	1.3888502e-05	2.9100594e+02
18500.	7.1625661e-01	2.1099521e+02	2.1099521e+02	1.1824420e-01	1.1758372e-04	1.3903592e-05	2.9119329e+02
18750.	6.8939178e-01	2.11131205e+02	2.11131205e+02	1.1344795e-01	1.2270999e-04	1.3921197e-05	2.9141183e+02
19000.	6.6155133e-01	2.1166882e+02	2.1166882e+02	1.0882416e-01	1.2810581e-04	1.3941008e-05	2.9165773e+02
19250.	6.3571371e-01	2.1206018e+02	2.1206018e+02	1.0437159e-01	1.3377896e-04	1.3962723e-05	2.9192724e+02
19500.	6.1085615e-01	2.1248103e+02	2.1248103e+02	1.0008831e-01	1.3973715e-04	1.3986055e-05	2.9221677e+02
19750.	5.8695436e-01	2.1292641e+02	2.1292641e+02	9.5971841e-02	1.4598788e-04	1.4010726e-05	2.9252287e+02
20000.	5.6398303e-01	2.1339162e+02	2.1339162e+02	9.2019110e-02	1.5253866e-04	1.4036472e-05	2.9284225e+02
20250.	5.4191591e-01	2.1387214e+02	2.1387214e+02	8.8226679e-02	1.5939668e-04	1.4063040e-05	2.9317178e+02
20500.	5.2072620e-01	2.1436370e+02	2.1436370e+02	8.4590651e-02	1.6656914e-04	1.4090192e-05	2.9350850e+02
20750.	5.0038653e-01	2.1486231e+02	2.1486231e+02	8.1106870e-02	1.7406301e-04	1.4117706e-05	2.9384964e+02
21000.	4.8086911e-01	2.1536418e+02	2.1536418e+02	7.7770908e-02	1.8188514e-04	1.4145373e-05	2.9419263e+02
21250.	4.6214602e-01	2.1586584e+02	2.1586584e+02	7.4578129e-02	1.9004231e-04	1.4173000e-05	2.9453507e+02
21500.	4.4418927e-01	2.1636406e+02	2.1636406e+02	7.1523728e-02	1.9854126e-04	1.4200411e-05	2.9487477e+02
21750.	4.2697104e-01	2.1685597e+02	2.1685597e+02	6.8602822e-02	2.0738867e-04	1.4227448e-05	2.9520978e+02
22000.	4.1046343e-01	2.1733892e+02	2.1733892e+02	6.5810409e-02	2.1659138e-04	1.4253967e-05	2.9553832e+02
22250.	3.9463901e-01	2.1781069e+02	2.1781069e+02	6.3141479e-02	2.2615638e-04	1.4279848e-05	2.9585891e+02
22500.	3.7947057e-01	2.1826928e+02	2.1826928e+02	6.0591002e-02	2.3609087e-04	1.4304983e-05	2.9617020e+02
22750.	3.6493144e-01	2.1871304e+02	2.1871304e+02	5.8153976e-02	2.4640246e-04	1.4329283e-05	2.9647112e+02
23000.	3.5099534e-01	2.1914086e+02	2.1914086e+02	5.5825416e-02	2.5709956e-04	1.4352690e-05	2.9676094e+02
23250.	3.3763641e-01	2.1955175e+02	2.1955175e+02	5.3400409e-02	2.6819108e-04	1.4375152e-05	2.9703902e+02
23500.	3.2482963e-01	2.1994521e+02	2.1994521e+02	5.1474152e-02	2.7968686e-04	1.4396644e-05	2.9730506e+02
23750.	3.1255032e-01	2.2032124e+02	2.2032124e+02	4.9441865e-02	2.9159841e-04	1.4417169e-05	2.9755910e+02
24000.	3.0077469e-01	2.2068008e+02	2.2068008e+02	4.7498948e-02	3.0393812e-04	1.4436741e-05	2.9780132e+02
24250.	2.8947946e-01	2.2102236e+02	2.2102236e+02	4.5640858e-02	3.1672055e-04	1.4455397e-05	2.9803218e+02
24500.	2.7864212e-01	2.2134934e+02	2.2134934e+02	4.3863223e-02	3.2996225e-04	1.4473208e-05	2.9825256e+02
24750.	2.6824072e-01	2.2166262e+02	2.2166262e+02	4.2161760e-02	3.4368256e-04	1.4490261e-05	2.9846354e+02
25000.	2.5825416e-01	2.2196423e+02	2.2196423e+02	4.0532336e-02	3.5790363e-04	1.4506670e-05	2.9866653e+02
25250.	2.4866203e-01	2.2225667e+02	2.2225667e+02	3.8970971e-02	3.7265097e-04	1.4522570e-05	2.9886320e+02
25500.	2.3944465e-01	2.2254294e+02	2.2254294e+02	3.7473797e-02	3.8795445e-04	1.4538126e-05	2.9905561e+02
25750.	2.3058300e-01	2.2282657e+02	2.2282657e+02	3.6037118e-02	4.0384834e-04	1.4553530e-05	2.9924613e+02
26000.	2.2205890e-01	2.2311148e+02	2.2311148e+02	3.4657364e-02	4.2037229e-04	1.4568995e-05	2.9943738e+02
26250.	2.1385474e-01	2.2340222e+02	2.2340222e+02	3.3331123e-02	4.3757205e-04	1.4584768e-05	2.9963242e+02
26500.	2.0595368e-01	2.2370383e+02	2.2370383e+02	3.2055122e-02	4.5550039e-04	1.4601121e-05	2.9983461e+02
26750.	1.98333962e-01	2.2402190e+02	2.2402190e+02	3.0826228e-02	4.7421811e-04	1.4618355e-05	3.0004769e+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE RATIO unitless	DENSITY RATIO unitless	VISCOSITY RATIO unitless	MOLECULAR WEIGHT unitless	PRESSURE DIFFERENCE newtons cm ⁻²
18000.	7.6158366-02	1.0395901-01	7.7991252-01	2.8964400+01	9.4138576+00
18250.	7.3127795-02	9.9672856-02	7.8094831-01		9.4447389+00
18500.	7.0290810-02	9.5653050-02	7.8179683-01		9.4736475+00
18750.	6.7556257-02	9.1773154-02	7.8278674-01		9.5015123+00
19000.	6.4922234-02	8.8032759-02	7.8390069-01		9.5283527+00
19250.	6.2386624-02	8.4430872-02	7.8512173-01		9.5541903+00
19500.	5.9947193-02	8.0965939-02	7.8643372-01		9.5790479+00
19750.	5.7601559-02	7.7635940-02	7.8782095-01		9.6029496+00
20000.	5.5347237-02	7.4438398-02	7.8926861-01		9.6259210+00
20250.	5.3181650-02	7.1370530-02	7.9076254-01		9.6479881+00
20500.	5.1021697-02	6.8429183-02	7.9228932-01		9.6691778+00
20750.	4.9106108-02	6.5610996-02	7.9383641-01		9.6895175+00
21000.	4.7190740-02	6.2912387-02	7.9539212-01		9.7090349+00
21250.	4.5353324-02	6.0329603-02	7.9694559-01		9.7277580+00
21500.	4.3591114-02	5.7858761-02	7.9848692-01		9.7457148+00
21750.	4.1901380-02	5.5495909-02	8.0000721-01		9.7629330+00
22000.	4.0281383-02	5.3237001-02	8.0149837-01		9.7794406+00
22250.	3.8728432-02	5.1077983-02	8.0295365-01		9.7952651+00
22500.	3.7239857-02	4.9014788-02	8.0436695-01		9.8104335+00
22750.	3.5813040-02	4.7043367-02	8.0573334-01		9.8249726+00
23000.	3.4445402-02	4.5159690-02	8.0704951-01		9.8389087+00
23250.	3.3134406-02	4.3359782-02	8.0831254-01		9.8522676+00
23500.	3.1877595-02	4.1639757-02	8.0952105-01		9.8650744+00
23750.	3.0672548-02	3.9995749-02	8.1067517-01		9.8773537+00
24000.	2.9516930-02	3.8424036-02	8.1177569-01		9.8891294+00
24250.	2.8408458-02	3.6920943-02	8.1282476-01		9.9001246+00
24500.	2.7344921-02	3.5482935-02	8.1382624-01		9.9112619+00
24750.	2.6324166-02	3.4106544-02	8.1478515-01		9.9216633+00
25000.	2.5344121-02	3.2788430-02	8.1570780-01		9.9316499+00
25250.	2.4402784-02	3.1525372-02	8.1660187-01		9.9412420+00
25500.	2.3498224-02	3.0314241-02	8.1737659-01		9.9504594+00
25750.	2.2628574-02	2.9152046-02	8.1834275-01		9.9593210+00
26000.	2.1792050-02	2.8035901-02	8.1921235-01		9.9678451+00
26250.	2.0986924-02	2.6963045-02	8.2009924-01		9.9760493+00
26500.	2.0211543-02	2.5930830-02	8.2101875-01		9.9839504+00
26750.	1.9464327-02	2.4936722-02	8.2198785-01	2.8964400+01	9.9915644+00

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

2.8964400+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
27000.	1.9099714-01	2.2436256+02	2.2436256+02	2.9641456-02	4.9379501-04	1.4636803-05	3.0027575+02
27250.	1.8391140-01	2.2473250+02	2.2473250+02	2.8497972-02	5.1431102-04	1.4656821-05	3.0052319+02
27500.	1.7706838-01	2.2513896+02	2.2513896+02	2.7393095-02	5.3585766-04	1.4678800-05	3.0079484+02
27750.	1.7045480-01	2.2558981+02	2.2558981+02	2.6324278-02	5.5853985-04	1.4703159-05	3.0109587+02
28000.	1.6405777-01	2.2609358+02	2.2609358+02	2.5289117-02	5.8247786-04	1.4730351-05	3.0143187+02
28250.	1.5804113-01	2.2627900+02	2.2627900+02	2.4331204-02	6.0582093-04	1.4740353-05	3.0155545+02
28500.	1.5228885-01	2.2691562+02	2.2691562+02	2.3379836-02	6.3194050-04	1.4774666-05	3.0197935+02
28750.	1.4675423-01	2.2753574+02	2.2753574+02	2.2468741-02	6.5905110-04	1.4808049-05	3.0239170+02
29000.	1.4142899-01	2.2814065+02	2.2814065+02	2.1596011-02	6.8719054-04	1.4840574-05	3.0279339+02
29250.	1.3630517-01	2.2873169+02	2.2873169+02	2.0759829-02	7.1639886-04	1.4872317-05	3.0318535+02
29500.	1.3137509-01	2.2931017+02	2.2931017+02	1.9958480-02	7.4671776-04	1.4903351-05	3.0356850+02
29750.	1.263138-01	2.2987726+02	2.2987726+02	1.9190358-02	7.7818982-04	1.4933741-05	3.0394364+02
30000.	1.2206647-01	2.3043426+02	2.3043426+02	1.8453921-02	8.1086060-04	1.4963557-05	3.0431165+02
30250.	1.1767484-01	2.3098234+02	2.3098234+02	1.7747722-02	8.4477689-04	1.4992865-05	3.0467333+02
30500.	1.1344859-01	2.3152265+02	2.3152265+02	1.7070386-02	8.7998755-04	1.5021727-05	3.0502947+02
30750.	1.0938177-01	2.3205635+02	2.3205635+02	1.6420609-02	9.1654380-04	1.5050207-05	3.0538084+02
31000.	1.0546830-01	2.3258450+02	2.3258450+02	1.5797158-02	9.5449846-04	1.5078363-05	3.0572815+02
31250.	1.0170230-01	2.3310822+02	2.3310822+02	1.5198858-02	9.9390716-04	1.5106253-05	3.0607217+02
31500.	9.80378093-02	2.3362848+02	2.3362848+02	1.4624599-02	1.0348272-03	1.5133933-05	3.0641354+02
31750.	9.4590244-02	2.3414630+02	2.3414630+02	1.4073328-02	1.0773184-03	1.5161455-05	3.0675292+02
32000.	9.1233502-02	2.3466267+02	2.3466267+02	1.3544035-02	1.1214437-03	1.5188873-05	3.0709098+02
32250.	8.8002827-02	2.3517847+02	2.3517847+02	1.3035774-02	1.1672675-03	1.5216234-05	3.0742830+02
32500.	8.4893359-02	2.3569462+02	2.3569462+02	1.2547633-02	1.2148576-03	1.5243587-05	3.0776546+02
32750.	8.1900433-02	2.3621191+02	2.3621191+02	1.2078754-02	1.2642838-03	1.5270974-05	3.0810302+02
33000.	7.9019569-02	2.3673119+02	2.3673119+02	1.1628319-02	1.3156191-03	1.5298438-05	3.0844149+02
33250.	7.6246430-02	2.3725320+02	2.3725320+02	1.1195544-02	1.3689393-03	1.5326021-05	3.0878137+02
33500.	7.3576879-02	2.3777868+02	2.3777868+02	1.0779688-02	1.4243231-03	1.5353759-05	3.0912313+02
33750.	7.1006897-02	2.3830832+02	2.3830832+02	1.0380041-02	1.4818523-03	1.5381689-05	3.0946722+02
34000.	6.8532667-02	2.3884268+02	2.3884268+02	9.9959356-03	1.5416105-03	1.5409839-05	3.0981399+02
34250.	6.6150483-02	2.3938245+02	2.3938245+02	9.6267225-03	1.6036866-03	1.5438246-05	3.1016387+02
34500.	6.3856785-02	2.3992809+02	2.3992809+02	9.2717927-03	1.6681707-03	1.5466933-05	3.1051715+02
34750.	6.1648170-02	2.4048017+02	2.4048017+02	8.9305596-03	1.7351576-03	1.5495928-05	3.1087421+02
35000.	5.9521349-02	2.4103908+02	2.4103908+02	8.6024678-03	1.8047440-03	1.5525252-05	3.1123525+02
35250.	5.7473165-02	2.4160527+02	2.4160527+02	8.2869834-03	1.8770312-03	1.5654926-05	3.1160058+02
35500.	5.5500577-02	2.4217903+02	2.4217903+02	7.9835990-03	1.9521228-03	1.5584965-05	3.1197035+02
35750.	5.3600677-02	2.4276074+02	2.4276074+02	7.6918282-03	2.0301270-03	1.5615388-05	3.1234480+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE RATIO unitless	DENSITY RATIO unitless	VISCOOSITY RATIO unitless	MOLECULAR WEIGHT unitless	PRESSURE DIFFERENCE newtons cm ⁻²
27000.	1.8743763-02	2.3978307-02	8.2302515-01	2.8964400+01	9.9989069+00
27250.	1.8048394-02	2.3053292-02	8.2415079-01		1.0005993+01
27500.	1.7376845-02	2.2159507-02	8.2538664-01		1.0012836+01
27750.	1.6727812-02	2.1294893-02	8.2675631-01		1.0019449+01
28000.	1.6100031-02	2.0457504-02	8.2828533-01		1.0025846+01
28250.	1.5509579-02	1.9682606-02	8.2884774-01		1.0031863+01
28500.	1.4945072-02	1.8913002-02	8.3077715-01		1.0037615+01
28750.	1.4401924-02	1.8175976-02	8.3265428-01		1.0043150+01
29000.	1.3879325-02	1.7469984-02	8.3448318-01		1.0048475+01
29250.	1.3376492-02	1.6735559-02	8.3626810-01		1.0053599+01
29500.	1.2892672-02	1.6145312-02	8.3801313-01		1.0058529+01
29750.	1.2427141-02	1.5523944-02	8.3972193-01		1.0063273+01
30000.	1.1979201-02	1.4928207-02	8.4139851-01		1.0067837+01
30250.	1.1548180-02	1.4356931-02	8.4304647-01		1.0072229+01
30500.	1.1133430-02	1.3809004-02	8.4466940-01		1.0076455+01
30750.	1.0734328-02	1.3283369-02	8.4627081-01		1.0080522+01
31000.	1.0350275-02	1.2779031-02	8.4785398-01		1.0084436+01
31250.	9.9806926-03	1.2295040-02	8.4942228-01		1.0088202+01
31500.	9.6250261-03	1.1830496-02	8.5097869-01		1.0091826+01
31750.	9.2827413-03	1.1384548-02	8.5252626-01		1.0095314+01
32000.	8.9533230-03	1.0956380-02	8.5406799-01		1.0098670+01
32250.	8.6362764-03	1.0545224-02	8.5560450-01		1.0101901+01
32500.	8.3311244-03	1.0150345-02	8.5714453-01		1.0105011+01
32750.	8.0374096-03	9.7710479-03	8.5868448-01		1.0108004+01
33000.	7.7546922-03	9.4066703-03	8.6022681-01		1.01110884+01
33250.	7.4825464-03	9.0565791-03	8.6177975-01		1.0113458+01
33500.	7.2205664-03	8.7201748-03	8.6333947-01		1.0116327+01
33750.	6.9683578-03	8.3968824-03	8.6490996-01		1.0118897+01
34000.	6.7255459-03	8.0861620-03	8.6649287-01		1.0121371+01
34250.	6.4917670-03	7.7874890-03	8.6809020-01		1.0123754+01
34500.	6.2666719-03	7.5003703-03	8.6970322-01		1.0126047+01
34750.	6.0499265-03	7.2243314-03	8.7133364-01		1.0128256+01
35000.	5.8412080-03	6.9589232-03	8.7298250-01		1.0130383+01
35250.	5.6402067-03	6.7037137-03	8.7465110-01		1.0132431+01
35500.	5.4466241-03	6.4582924-03	8.7634019-01		1.0134403+01
35750.	5.2601749-03	6.2222659-03	8.7805086-01	2.8964400+01	1.0136303+01

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

2.8964400+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
36000.	5.1770654e-02	2.4335058e+02	2.4335058e+02	7.4112084e-03	2.1111540e-03	1.5646202e-05	3.1272402e+02
36250.	5.0007814e-02	2.4394878e+02	2.4394878e+02	7.1412949e-03	2.1953188e-03	1.5677419e-05	3.1310816e+02
36500.	4.8309561e-02	2.4455551e+02	2.4455551e+02	6.8816628e-03	2.2827397e-03	1.5709045e-05	3.1349728e+02
36750.	4.6673421e-02	2.4517081e+02	2.4517081e+02	6.6319099e-03	2.3735367e-03	1.5741081e-05	3.1389141e+02
37000.	4.5096980e-02	2.4579478e+02	2.4579478e+02	6.3916438e-03	2.4678365e-03	1.5773532e-05	3.1429059e+02
37250.	4.3577957e-02	2.4642734e+02	2.4642734e+02	6.1604967e-03	2.5657657e-03	1.5806391e-05	3.1469475e+02
37500.	4.2114125e-02	2.4706844e+02	2.4706844e+02	5.9381104e-03	2.6674571e-03	1.5839655e-05	3.1510383e+02
37750.	4.0703376e-02	2.4771795e+02	2.4771795e+02	5.7241461e-03	2.7730451e-03	1.5873315e-05	3.1551775e+02
38000.	3.9343655e-02	2.4837562e+02	2.4837562e+02	5.5182770e-03	2.8826674e-03	1.5907357e-05	3.1593631e+02
38250.	3.8033008e-02	2.4904134e+02	2.4904134e+02	5.3201882e-03	2.9964681e-03	1.5941774e-05	3.1635942e+02
38500.	3.6769549e-02	2.4971464e+02	2.4971464e+02	5.1295829e-03	3.1145886e-03	1.5976541e-05	3.1678678e+02
38750.	3.5551469e-02	2.5039520e+02	2.5039520e+02	4.9461730e-03	3.2371772e-03	1.6011638e-05	3.1721817e+02
39000.	3.4377026e-02	2.5108266e+02	2.5108266e+02	4.7696810e-03	3.3643858e-03	1.6047047e-05	3.1765333e+02
39250.	3.3244545e-02	2.5177642e+02	2.5177642e+02	4.5996438e-03	3.4963657e-03	1.6082736e-05	3.1809188e+02
39500.	3.2152425e-02	2.5247596e+02	2.5247596e+02	4.4364078e-03	3.6332720e-03	1.6118676e-05	3.1853347e+02
39750.	3.1099123e-02	2.5318066e+02	2.5318066e+02	4.2791288e-03	3.7752628e-03	1.6154836e-05	3.1897770e+02
40000.	3.0083150e-02	2.5388979e+02	2.5388979e+02	4.1277733e-03	3.9224962e-03	1.6191175e-05	3.1942409e+02
40250.	2.9103085e-02	2.5460265e+02	2.5460265e+02	3.9821156e-03	4.0751351e-03	1.6227659e-05	3.1987221e+02
40500.	2.8157561e-02	2.5531831e+02	2.5531831e+02	3.8419422e-03	4.2333378e-03	1.6264239e-05	3.2032146e+02
40750.	2.7245262e-02	2.5603600e+02	2.5603600e+02	3.7070438e-03	4.3972707e-03	1.6300875e-05	3.2077135e+02
41000.	2.6364920e-02	2.5675467e+02	2.5675467e+02	3.5772217e-03	4.5670959e-03	1.6337515e-05	3.2122122e+02
41250.	2.5515322e-02	2.5747322e+02	2.5747322e+02	3.4522858e-03	4.7429734e-03	1.6374100e-05	3.2167039e+02
41500.	2.4695310e-02	2.5819072e+02	2.5819072e+02	3.3320508e-03	4.9250704e-03	1.6410585e-05	3.2211827e+02
41750.	2.3903754e-02	2.5890582e+02	2.5890582e+02	3.2163407e-03	5.1135444e-03	1.6446901e-05	3.2256405e+02
42000.	2.3139577e-02	2.5961737e+02	2.5961737e+02	3.1049844e-03	5.3085585e-03	1.6482991e-05	3.2300700e+02
42250.	2.2401751e-02	2.6032399e+02	2.6032399e+02	2.9978198e-03	5.5102662e-03	1.6516786e-05	3.2344627e+02
42500.	2.1689277e-02	2.6102428e+02	2.6102428e+02	2.8946891e-03	5.7188231e-03	1.6554215e-05	3.2388102e+02
42750.	2.1001202e-02	2.6171675e+02	2.6171675e+02	2.7954413e-03	5.9343778e-03	1.6589205e-05	3.2431035e+02
43000.	2.0336609e-02	2.6239986e+02	2.6239986e+02	2.6999312e-03	6.1570753e-03	1.6623680e-05	3.2473332e+02
43250.	1.9694617e-02	2.6307195e+02	2.6307195e+02	2.6080190e-03	6.3870540e-03	1.6657558e-05	3.2514892e+02
43500.	1.9074375e-02	2.6373138e+02	2.6373138e+02	2.5195690e-03	6.6244502e-03	1.6690760e-05	3.2555619e+02
43750.	1.8475071e-02	2.6437621e+02	2.6437621e+02	2.4344536e-03	6.8693802e-03	1.6723187e-05	3.2595394e+02
44000.	1.7895922e-02	2.6500471e+02	2.6500471e+02	2.3525465e-03	7.1219673e-03	1.6754759e-05	3.2634116e+02
44250.	1.7336182e-02	2.6561485e+02	2.6561485e+02	2.2737298e-03	7.3823087e-03	1.6785375e-05	3.2671662e+02
44500.	1.6795124e-02	2.6620456e+02	2.6620456e+02	2.1978876e-03	7.6504980e-03	1.6814934e-05	3.2707910e+02
44750.	1.6272054e-02	2.6677182e+02	2.6677182e+02	2.1249082e-03	7.9266201e-03	1.6843340e-05	3.2742741e+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE RATIO unitless	DENSITY RATIO unitless	VISCOSITY RATIO unitless	MOLECULAR WEIGHT unitless	PRESSURE DIFFERENCE newtons cm ⁻²
≤6000.	5.0805831-03	5.9952599-03	8.7978350-01	2.8964400+01	1.0138133+01
6250.	4.9075844-03	5.7769147-03	8.8153882-01		1.0139896+01
6500.	4.7409241-03	5.5668866-03	8.8331715-01		1.0141595+01
6750.	4.5803592-03	5.3648503-03	8.8511856-01		1.0143231+01
7000.					
7250.	4.4256530-03	5.1704682-03	8.8694324-01		1.0144807+01
7500.	4.2765817-03	4.9839030-03	8.8879092-01		1.0146326+01
7750.	4.1329266-03	4.8036047-03	8.9066133-01		1.0147790+01
8000.	3.9944808-03	4.6305193-03	8.9255405-01		1.0149201+01
8250.					
8500.	3.8610428-03	4.4639825-03	8.9446823-01		1.0150560+01
8750.	3.7324206-03	4.3037396-03	8.9640349-01		1.0151871+01
9000.	3.6084294-03	4.1495504-03	8.9835840-01		1.0153134+01
9250.	3.4888915-03	4.0011819-03	9.0033193-01		1.0154353+01
9500.					
9750.	3.3736359-03	3.8584096-03	9.0232226-01		1.0155527+01
10000.	3.264983-03	3.7210206-03	9.0432975-01		1.0156659+01
10250.	3.1553217-03	3.5883919-03	9.0635066-01		1.0157752+01
10500.	3.0519544-03	3.4615798-03	9.0838390-01		1.0158805+01
10750.					
11000.	2.9522506-03	3.3391415-03	9.1042726-01		1.0159821+01
11250.	2.8560705-03	3.2213125-03	9.1247875-01		1.0160801+01
11500.	2.7632803-03	3.1079199-03	9.1453565-01		1.0161747+01
11750.	2.6737506-03	2.9987945-03	9.1659569-01		1.0162659+01
12000.					
12250.	2.5873570-03	2.8937756-03	9.1865590-01		1.0163539+01
12500.	2.5039806-03	2.7927093-03	9.2071310-01		1.0164389+01
12750.	2.4235076-03	2.6954456-03	9.2276464-01		1.0165209+01
13000.	2.3458272-03	2.601827-03	9.2480671-01		1.0166000+01
13250.					
13500.	1.9957606-03	2.1840958-03	9.3474694-01		1.0169567+01
13750.	1.9327578-03	2.1097439-03	9.3665191-01		1.0170209+01
14000.	1.8718896-03	2.0381927-03	9.3851881-01		1.0170830+01
14250.	1.8130760-03	1.9693390-03	9.4034223-01		1.0171429+01
14500.					
14750.	1.7562404-03	1.9030807-03	9.4211751-01	2.8964400+01	1.0172008+01
15000.	1.7013097-03	1.8393223-03	9.4383904-01		1.0172568+01
15250.	1.6482122-03	1.7779701-03	9.4550115-01		1.0173109+01
15500.	1.5968800-03	1.7189338-03	9.4709838-01		1.0173632+01

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE newtons cm ⁻²	KINETIC TEMPERATURE degrees K	VIRTUAL TEMPERATURE degrees K	DENSITY kg m ⁻³	KINEMATIC VISCOSITY m ² sec ⁻¹	COEFFICIENT OF VISCOSITY newton-sec m ⁻²	SPEED OF SOUND m sec ⁻¹
45000.	1.5766305e-02	2.6731429e+02	2.6731429e+02	2.0546863e-03	8.2107314e-03	1.6870477e-05	3.2776014e+02
45250.	1.5277242e-02	2.6732983e+02	2.6782983e+02	1.9871184e-03	8.5028871e-03	1.6896244e-05	3.2807605e+02
45500.	1.4804243e-02	2.6831589e+02	2.6831589e+02	1.9221071e-03	8.8031073e-03	1.6920515e-05	3.2837361e+02
45750.	1.4346717e-02	2.6877010e+02	2.6877010e+02	1.8595564e-03	9.1114084e-03	1.6943178e-05	3.2865143e+02
46000.	1.3904100e-02	2.6918990e+02	2.6918990e+02	1.7993759e-03	9.4277728e-03	1.6964107e-05	3.2890799e+02
46250.	1.3475842e-02	2.6957262e+02	2.6957262e+02	1.7414776e-03	9.7521639e-03	1.6983175e-05	3.2914172e+02
46500.	1.3061420e-02	2.6991556e+02	2.6991556e+02	1.6857774e-03	1.0084516e-02	1.7000250e-05	3.2935102e+02
46750.	1.2660328e-02	2.7021588e+02	2.7021588e+02	1.6321943e-03	1.0424736e-02	1.7015195e-05	3.2953420e+02
47000.	1.2272081e-02	2.7047061e+02	2.7047061e+02	1.5806507e-03	1.0772693e-02	1.7027864e-05	3.2968948e+02
47250.	1.1896217e-02	2.7067679e+02	2.7067679e+02	1.5310719e-03	1.1128226e-02	1.7038115e-05	3.2981512e+02
47500.	1.1532281e-02	2.7083127e+02	2.7083127e+02	1.4833859e-03	1.1491138e-02	1.7045793e-05	3.2990922e+02
47750.	1.1179850e-02	2.7093109e+02	2.7093109e+02	1.4375232e-03	1.1861202e-02	1.7050753e-05	3.2997001e+02
48000.	1.0838504e-02	2.7097250e+02	2.7097250e+02	1.3934194e-03	1.2238103e-02	1.7052811e-05	3.2999523e+02
48250.	1.0507849e-02	2.7095242e+02	2.7095242e+02	1.3510100e-03	1.2621530e-02	1.7051813e-05	3.2998301e+02
48500.	1.0187503e-02	2.7086734e+02	2.7086734e+02	1.3102339e-03	1.3011101e-02	1.7047586e-05	3.2993119e+02
48750.	9.8770976e-03	2.7071362e+02	2.7071362e+02	1.2710335e-03	1.3406371e-02	1.7039946e-05	3.2983756e+02
49000.	9.5762799e-03	2.7048761e+02	2.7048761e+02	1.2333525e-03	1.3806848e-02	1.7028710e-05	3.2969984e+02
49250.	9.2694900e-03	2.7063017e+02	2.7063017e+02	1.1932114e-03	1.4277267e-02	1.7035798e-05	3.2978672e+02
49500.	8.9698768e-03	2.7084969e+02	2.7084969e+02	1.1562804e-03	1.4742712e-02	1.7046708e-05	3.2992044e+02
49750.	8.7184679e-03	2.7102480e+02	2.7102480e+02	1.1206472e-03	1.5219250e-02	1.7055409e-05	3.3002707e+02
50000.	8.4550115e-03	2.7115662e+02	2.7115662e+02	1.0862549e-03	1.5707140e-02	1.7061957e-05	3.3010733e+02
50250.	8.1992726e-03	2.7124635e+02	2.7124635e+02	1.0530505e-03	1.6206443e-02	1.7066413e-05	3.3016194e+02
50500.	7.9510153e-03	2.7129508e+02	2.7129508e+02	1.0209828e-03	1.6718042e-02	1.7068833e-05	3.3019159e+02
50750.	7.7100180e-03	2.7130383e+02	2.7130383e+02	9.9000460e-04	1.7241604e-02	1.7069268e-05	3.3019692e+02
51000.	7.4760636e-03	2.7127369e+02	2.7127369e+02	9.6007037e-04	1.7777625e-02	1.7067771e-05	3.3017857e+02
51250.	7.2489410e-03	2.7120576e+02	2.7120576e+02	9.3113661e-04	1.8326417e-02	1.7064398e-05	3.3013724e+02
51500.	7.0284473e-03	2.7110114e+02	2.7110114e+02	9.0316230e-04	1.8888301e-02	1.7059201e-05	3.3007355e+02
51750.	6.8143876e-03	2.7096078e+02	2.7096078e+02	8.7610901e-04	1.9463592e-02	1.7052229e-05	3.2998809e+02
52000.	6.6065708e-03	2.7078585e+02	2.7078585e+02	8.4993924e-04	2.0052652e-02	1.7043536e-05	3.2988156e+02
52250.	6.4048138e-03	2.7057727e+02	2.7057727e+02	8.2461827e-04	2.0655821e-02	1.7033168e-05	3.2975448e+02
52500.	6.2089363e-03	2.7033617e+02	2.7033617e+02	8.0011204e-04	2.1273493e-02	1.7021178e-05	3.2960754e+02
52750.	6.0187683e-03	2.7006346e+02	2.7006346e+02	7.7638931e-04	2.1906034e-02	1.7007611e-05	3.2944124e+02
53000.	5.8341418e-03	2.6976022e+02	2.6976022e+02	7.5341944e-04	2.2553860e-02	1.6992517e-05	3.2925623e+02
53250.	5.6548949e-03	2.6942744e+02	2.6942744e+02	7.3117352e-04	2.3217394e-02	1.6975944e-05	3.2905309e+02
53500.	5.4808709e-03	2.6906612e+02	2.6906612e+02	7.0962404e-04	2.3897073e-02	1.6957938e-05	3.2883237e+02
53750.	5.3119200e-03	2.6867717e+02	2.6867717e+02	6.8874508e-04	2.4593340e-02	1.6938542e-05	3.2859461e+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	DENSITY	RATIO	MOLECULAR VISCOSITY	WEIGHT	PRESSURE DIFFERENCE	metres	unitless	unitless	unitless	newtons cm ⁻²
15000.	1.0572477-03	1.0662128-03	9.4982431-01	2.8964400+01	1.0174138+01						
16000.	1.0364977-03	1.0455991-03	9.5388910-01	1.0175000+01	1.0176843+01	1.01768008+01	1.0177392+01	1.0179066+01	1.0179274+01	1.0179396+01	1.0180328+01
16250.	1.03227100-03	1.04087596-03	9.5496129-01	1.0176843+01	1.01768008+01	1.0177392+01	1.0179066+01	1.0179274+01	1.0179396+01	1.0180328+01	1.0180634+01
16500.	1.03016800-03	1.04087596-03	9.5500100+01	1.0176843+01	1.01768008+01	1.0177392+01	1.0179066+01	1.0179274+01	1.0179396+01	1.0180328+01	1.0180634+01
17000.	1.0243373-03	1.0278694-03	9.5527416-01	1.0177392+01	1.0178008+01	1.0178396+01	1.0179066+01	1.0179274+01	1.0179396+01	1.0180328+01	1.0180634+01
17250.	1.0167513-03	1.02137359-03	9.5585056-01	1.0178008+01	1.0178396+01	1.0178696+01	1.0179066+01	1.0179274+01	1.0179396+01	1.0180328+01	1.0180634+01
17500.	1.011317359-03	1.02199376-03	9.5638555-01	1.0178696+01	1.0179066+01	1.0179396+01	1.017971497-01	1.0180277+01	1.0180634+01	1.0180913+01	1.0181395+01
18000.	1.0063512-03	1.021271997-03	9.5682692-01	1.0179066+01	1.0179396+01	1.017971497-01	1.0180277+01	1.0180634+01	1.0180913+01	1.0181395+01	1.0181786-01
18250.	1.00312026-03	1.020928927-03	9.5859308-01	1.017971497-01	1.0180277+01	1.0180634+01	1.01811786+01	1.01815350-01	1.0181913+01	1.0182309+01	1.0182694+01
18500.	9.97738117-04	9.9771429-04	9.5752169-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
19000.	9.3978117-04	9.9771429-04	9.5752169-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
19250.	9.0967393-04	9.6524235-04	9.5792025-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
19500.	8.8223371-04	9.3367222-04	9.585336-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
19750.	8.5559863-04	9.0654191-04	9.5902360-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
20000.	8.2974398-04	8.8028363-04	9.5937778-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
20250.	8.0464669-04	8.5185988-04	9.5964116-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
20500.	7.8367360-04	7.7664111-04	9.5971812-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
20750.	7.6887371-04	7.6051861-04	9.5987234-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
21000.	7.3367360-04	7.2664111-04	9.5997181-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
21250.	7.1138491-04	7.5323430-04	9.5995284-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
21500.	6.8974618-04	7.3060561-04	9.5997723-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
21750.	6.6887371-04	7.0872349-04	9.5988441-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
22000.	6.4834475-04	6.8755909-04	9.5983537-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
22250.	6.2854505-04	6.6707082-04	9.5777723-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
22500.	6.0932235-04	6.4721662-04	9.5709891-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
22750.	5.9065995-04	6.2805624-04	9.5633531-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
23000.	5.7254139-04	6.0947488-04	9.5548659-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
23250.	5.5495076-04	5.9147915-04	9.5455466-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
23500.	5.3787267-04	5.7405681-04	9.5359421-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
23750.	5.2129424-04	5.5711688-04	9.5245160-01	1.0181913+01	1.0182309+01	1.0182694+01	1.0183284+01	1.0183655+01	1.0184070+01	1.0184499+01	1.0184885+01
24000.	5.0184070-04	4.9964400-04	2.8964400+01	1.0174138+01							

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
54000.	5.1478915e-03	2.6826166e+02	2.6826166e+02	6.6851096e-04	2.5306703e-02	1.6917818e-05	3.2834042e+02
54250.	4.9886464e-03	2.6782047e+02	2.6782047e+02	6.4889841e-04	2.6037628e-02	1.6895776e-05	3.2807031e+02
54500.	4.8340461e-03	2.6735455e+02	2.6735455e+02	6.2984555e-04	2.6786639e-02	1.6874490e-05	3.2778483e+02
54750.	4.6839549e-03	2.6686487e+02	2.6686487e+02	6.1144734e-04	2.7554289e-02	1.6847996e-05	3.2748450e+02
55000.	4.5382458e-03	2.6635233e+02	2.6635233e+02	5.9356636e-04	2.8341122e-02	1.6822337e-05	3.2716987e+02
55250.	4.3967917e-03	2.6581781e+02	2.6581781e+02	5.7622165e-04	2.9147728e-02	1.6795552e-05	3.2684142e+02
55500.	4.2594714e-03	2.6526231e+02	2.6526231e+02	5.5939412e-04	2.9974733e-02	1.6767689e-05	3.2649973e+02
55750.	4.1261654e-03	2.6468660e+02	2.6468660e+02	5.4306576e-04	3.0822757e-02	1.6738784e-05	3.2614523e+02
56000.	3.9967607e-03	2.6409158e+02	2.6409158e+02	5.2721934e-04	3.1692461e-02	1.6708879e-05	3.2577843e+02
56250.	3.8711454e-03	2.6347816e+02	2.6347816e+02	5.1183809e-04	3.2584551e-02	1.6678015e-05	3.2539987e+02
56500.	3.7492116e-03	2.6284720e+02	2.6284720e+02	4.9690613e-04	3.3499754e-02	1.6646234e-05	3.2501001e+02
56750.	3.6308558e-03	2.6219954e+02	2.6219954e+02	4.8240837e-04	3.4438819e-02	1.6613575e-05	3.2460934e+02
57000.	3.5159756e-03	2.6153592e+02	2.6153592e+02	4.6833031e-04	3.5402517e-02	1.6580072e-05	3.2419829e+02
57250.	3.4044730e-03	2.6085715e+02	2.6085715e+02	4.5465807e-04	3.6391663e-02	1.6545763e-05	3.2377732e+02
57500.	3.2962517e-03	2.6016418e+02	2.6016418e+02	4.4137792e-04	3.7407159e-02	1.6510694e-05	3.2334698e+02
57750.	3.1912198e-03	2.5945753e+02	2.5945753e+02	4.2847766e-04	3.8449818e-02	1.6474888e-05	3.2290755e+02
58000.	3.0928286e-03	2.5873822e+02	2.5873822e+02	4.1594443e-04	3.9520649e-02	1.6438394e-05	3.2245963e+02
58250.	2.9903656e-03	2.5800690e+02	2.5800690e+02	4.0376692e-04	4.0620569e-02	1.6401242e-05	3.2200359e+02
58500.	2.8943715e-03	2.5726427e+02	2.5726427e+02	3.9193365e-04	4.1750602e-02	1.6363466e-05	3.2153984e+02
58750.	2.8012216e-03	2.5651123e+02	2.5651123e+02	3.8043358e-04	4.2911851e-02	1.6325109e-05	3.2106890e+02
59000.	2.7108367e-03	2.5574828e+02	2.5574828e+02	3.6925672e-04	4.4105342e-02	1.6286194e-05	3.2059106e+02
59250.	2.6231383e-03	2.5497627e+02	2.5497627e+02	3.5839272e-04	4.5322890e-02	1.6246762e-05	3.2010683e+02
59500.	2.5380510e-03	2.5419568e+02	2.5419568e+02	3.4783232e-04	4.6593820e-02	1.6206837e-05	3.1961646e+02
59750.	2.4555021e-03	2.5340742e+02	2.5340742e+02	3.3756603e-04	4.7891256e-02	1.6166461e-05	3.1912051e+02
60000.	2.3754195e-03	2.5261192e+02	2.5261192e+02	3.2758516e-04	4.9225845e-02	1.6125656e-05	3.1861922e+02
60250.	2.2977344e-03	2.5181012e+02	2.5181012e+02	3.178088e-04	5.0599043e-02	1.6084668e-05	3.1811317e+02
60500.	2.2223798e-03	2.5100237e+02	2.5100237e+02	3.0849534e-04	5.2012177e-02	1.6042914e-05	3.1760254e+02
60750.	2.1492900e-03	2.5018933e+02	2.5018933e+02	2.9927055e-04	5.3466756e-02	1.6001026e-05	3.1708774e+02
61000.	2.0784015e-03	2.4937169e+02	2.4937169e+02	2.9034881e-04	5.4964365e-02	1.5958838e-05	3.1656918e+02
61250.	2.0096524e-03	2.4854984e+02	2.4854984e+02	2.8167300e-04	5.6506545e-02	1.5916369e-05	3.1604709e+02
61500.	1.9429829e-03	2.4772443e+02	2.4772443e+02	2.7323599e-04	5.8095022e-02	1.5873651e-05	3.1552187e+02
61750.	1.8783345e-03	2.4689601e+02	2.4689601e+02	2.6503097e-04	5.9731557e-02	1.5830713e-05	3.1499386e+02
62000.	1.8156504e-03	2.4606511e+02	2.4606511e+02	2.5705139e-04	6.1417989e-02	1.5787579e-05	3.1446338e+02
62250.	1.7548756e-03	2.4523228e+02	2.4523228e+02	2.4929090e-04	6.3156255e-02	1.5744280e-05	3.1393076e+02
62500.	1.6959563e-03	2.4439787e+02	2.4439787e+02	2.4174360e-04	6.4948280e-02	1.5700831e-05	3.1339622e+02
62750.	1.6388403e-03	2.4356239e+02	2.4356239e+02	2.3440353e-04	6.6796173e-02	1.5657259e-05	3.1286009e+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE RATIO unitless	DENSITY RATIO unitless	VISCOOSITY RATIO unitless	MOLECULAR WEIGHT unitless	PRESSURE DIFFERENCE newtons cm ⁻²
54000.	5.0519529-04	5.4078859-04	9.5128572-01	2.8964400+01	1.0184756+01
54250.	4.6956755-04	5.2492312-04	9.5004684-01		1.0184915+01
54500.	4.7439565-04	5.0954195-04	9.4873750-01		1.0185070+01
54750.	4.5966624-04	4.9462726-04	9.4736022-01		1.0185220+01
55000.	4.4536689-04	4.8016293-04	9.4591738-01		1.0185366+01
55250.	4.3148509-04	4.6613161-04	9.4441128-01		1.0185507+01
55500.	4.1800898-04	4.5251907-04	9.4284457-01		1.0185645+01
55750.	4.0492681-04	4.3931033-04	9.4121921-01		1.0185778+01
56000.	3.9222751-04	4.2649145-04	9.3953764-01		1.0185907+01
56250.	3.7990008-04	4.1404886-04	9.3780218-01		1.0186033+01
56500.	3.6793395-04	4.0196973-04	9.3601513-01		1.0186155+01
56750.	3.5631894-04	3.9024164-04	9.3417872-01		1.0186273+01
57000.	3.4504502-04	3.7885346-04	9.3229486-01		1.0186388+01
57250.	3.3410255-04	3.6779336-04	9.3036570-01		1.0186500+01
57500.	3.2348211-04	3.5705046-04	9.2839378-01		1.0186608+01
57750.	3.1317467-04	3.4661486-04	9.2638041-01		1.0186713+01
58000.	3.0317127-04	3.3647616-04	9.2432833-01		1.0186815+01
58250.	2.9346357-04	3.2662522-04	9.2223929-01		1.0186914+01
58500.	2.8404305-04	3.1705276-04	9.2011516-01		1.0187010+01
58750.	2.7490167-04	3.0774983-04	9.1795834-01		1.0187103+01
59000.	2.6603162-04	2.9870837-04	9.1577015-01		1.0187193+01
59250.	2.5742522-04	2.8991999-04	9.1355292-01		1.0187281+01
59500.	2.4907506-04	2.8137721-04	9.1130790-01		1.0187366+01
59750.	2.4097402-04	2.7307235-04	9.0903760-01		1.0187449+01
60000.	2.3311500-04	2.6499837-04	9.0674314-01		1.0187529+01
60250.	2.2549127-04	2.5714814-04	9.0442716-01		1.0187606+01
60500.	2.1809624-04	2.4951531-04	9.0209055-01		1.0187682+01
60750.	2.1092348-04	2.4209341-04	8.9973518-01		1.0187755+01
61000.	2.0396674-04	2.3487621-04	8.9736295-01		1.0187826+01
61250.	1.9721996-04	2.2785197-04	8.9497492-01		1.0187894+01
61500.	1.9067725-04	2.2103289-04	8.9257292-01		1.0187961+01
61750.	1.8433290-04	2.1439547-04	8.9015850-01		1.0188026+01
62000.	1.7818131-04	2.0794043-04	8.8773313-01		1.0188088+01
62250.	1.7221706-04	2.0166263-04	8.8529841-01		1.0188149+01
62500.	1.6643496-04	1.9555727-04	8.8285529-01		1.0188208+01
62750.	1.6082981-04	1.8961956-04	8.8040525-01	2.8964400+01	1.0188265+01

metres	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	kg m ⁻³	m sec ⁻¹	m sec ⁻¹
GEOMETRIC	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
63000.	1.5834767-03	2.42272632+02	2.42272632+02	2.2726500-04	6.87261227-02	1.51613569-05	3.1232265+02
63250.	1.5298159-03	2.4189050+02	2.4189050+02	2.20322545-04	7.0668349-02	1.5569840-05	3.1178416+02
63500.	1.47781808-03	2.4189050+02	2.4189050+02	2.04189050+02	2.4189050+02	1.4105411+02	2.4105411+02
64000.	1.3785800-03	2.3938440+02	2.3938440+02	2.0061984-04	7.6953251-02	1.5438349-05	3.1016513+02
64250.	1.3312645-03	2.3855142+02	2.3855142+02	1.941066-04	8.19415465-02	1.53944949-05	3.0962503+02
64500.	1.2852746-03	2.3772016-03	2.3772016-03	1.2410184-03	1.2410184-03	1.2410184-03	1.2410184-03
64750.	1.24274140-03	2.3689490+02	2.3689490+02	2.4021875+02	2.4021875+02	1.88272484-04	1.88272484-04
65000.	1.1980055-03	2.36063930+02	2.36063930+02	1.7679378-04	8.6333018-02	1.5263141-05	3.08036647+02
65250.	1.1563457-03	2.3523950+02	2.3523950+02	1.7124392-04	8.0875470-02	1.5219470-05	3.07466818+02
65500.	1.1160005-03	2.3441794+02	2.3441794+02	1.3491794+02	1.3491794+02	1.5175882-05	3.06393080+02
65750.	1.0769327-03	2.3359949+02	2.3359949+02	1.06030329-04	9.4222172-02	1.5132391-05	3.06394552+02
66000.	1.0391056-03	2.3278436+02	2.3278436+02	1.5550474-04	9.7032473-02	1.5089010-05	3.05859494+02
66250.	1.0024833-03	2.3197269+02	2.3197269+02	1.0294605-01	9.93931949-02	1.50459745-05	3.0532578+02
66500.	9.62703149-04	2.3116461+02	2.3116461+02	1.0294605-01	1.0294605-01	1.5002605-05	3.04793452+02
66750.	9.3271615-04	2.3036050+02	2.3036050+02	1.0605652-01	1.0605652-01	1.4105199-04	3.04262949+02
67000.	8.0617863-04	2.27797205+02	2.27797205+02	1.1605051-01	1.1605051-01	1.2771576-01	1.4874050-05
67250.	8.0673653-04	2.2676404+02	2.2676404+02	1.126009-01	1.126009-01	1.2631576-01	1.4874050-05
67500.	8.03626466-04	2.2562149+02	2.2562149+02	1.02584956-04	1.02584956-04	1.2631576-01	1.4874050-05
67750.	8.00717863-04	2.2407571+02	2.2407571+02	1.2771576-01	1.2771576-01	1.2362062-04	1.4789129-05
68000.	7.7707160-04	2.2640073+02	2.2640073+02	1.1956965-04	1.1956965-04	1.2333277-01	1.4746916-05
68250.	7.481699-04	2.2562149+02	2.2562149+02	1.02584956-04	1.02584956-04	1.2333277-01	1.4746916-05
68500.	7.216881-04	2.2484653+02	2.2484653+02	1.111507-04	1.111507-04	1.2271576-01	1.4746916-05
68750.	6.965410-04	2.2407571+02	2.2407571+02	1.081050-04	1.081050-04	1.2407571+02	1.4621271-05
69000.	6.6989220-04	2.2330920+02	2.2330920+02	1.0450475-04	1.0450475-04	1.3951253-01	1.4579723-05
69250.	6.452534-04	2.2254676+02	2.2254676+02	1.0433354-04	1.0433354-04	1.3951253-01	1.4579723-05
69500.	6.0854834-04	2.2178860+02	2.2178860+02	1.048512-01	1.048512-01	1.4949711-05	2.9854834+02
69750.	5.9847750-04	2.2103421+02	2.2103421+02	9.432484-05	9.432484-05	1.5325807-01	1.4456043-05
70000.	5.7624817-04	2.2028366+02	2.2028366+02	9.1130767-05	9.1130767-05	1.4415118-01	1.4252683-05
70250.	5.5476677-04	2.1953665+02	2.1953665+02	8.8032281-05	8.8032281-05	1.4374472-01	1.4326272-02
70500.	5.34701358-04	2.1879318+02	2.1879318+02	8.5026883-05	8.5026883-05	1.4333662-01	1.4326272-02
70750.	5.1396379-04	2.1658112+02	2.1658112+02	8.1984888-01	8.1984888-01	1.4212345-01	1.4172067-02
71000.	4.945703-04	2.1731552+02	2.1731552+02	7.97286366-05	7.97286366-05	1.4079629-01	1.4079629-02
71250.	4.758263-04	2.1658112+02	2.1658112+02	7.6549664-05	7.6549664-05	1.4172345-01	1.4172345-02
71500.	4.5783041-04	2.158112+02	2.158112+02	7.3891179-05	7.3891179-05	1.4172067-01	1.4079629-02
71750.	4.4039062-04	2.1511890+02	2.1511890+02	7.1317688-05	7.1317688-05	1.4131855-01	1.4079629-02

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE RATIO unitless	DENSITY RATIO unitless	VISCOOSITY RATIO unitless	MOLECULAR WEIGHT unitless	PRESSURE DIFFERENCE newtons cm ⁻²
63000.	1.5539662-04	1.8384488-04	8.7794966-01	2.8964400+01	1.0188321+01
63250.	1.5013055-04	1.7822881-04	8.7548967-01		1.0188374+01
63500.	1.4502696-04	1.7276710-04	8.7302681-01		1.0188426+01
63750.	1.4008120-04	1.6745564-04	8.7056163-01		1.0188477+01
64000.	1.3528881-04	1.6229441-04	8.6809595-01		1.0188525+01
64250.	1.3064544-04	1.5726753-04	8.6563029-01		1.0188573+01
64500.	1.2614688-04	1.5238327-04	8.6316592-01		1.0188619+01
64750.	1.2178902-04	1.4763407-04	8.6070349-01		1.0188663+01
65000.	1.1756769-04	1.4301644-04	8.5824402-01		1.0188706+01
65250.	1.1347954-04	1.3852691-04	8.5578483-01		1.0188748+01
65500.	1.0952022-04	1.3416224-04	8.5333747-01		1.0188788+01
65750.	1.0568625-04	1.2991923-04	8.5089199-01		1.0188827+01
66000.	1.0197403-04	1.2579478-04	8.4845266-01		1.0188865+01
66250.	9.8380056-05	1.2176591-04	8.4601969-01		1.0188902+01
66500.	9.4900935-05	1.1788973-04	8.4359414-01		1.0188937+01
66750.	9.1533359-05	1.1410330-04	8.4117660-01		1.0188971+01
67000.	8.8274117-05	1.1042403-04	8.3876681-01		1.0189005+01
67250.	8.5120068-05	1.0684914-04	8.3636574-01		1.0189037+01
67500.	8.2068159-05	1.0337605-04	8.3397362-01		1.0189068+01
67750.	7.9115429-05	1.0000226-04	8.3159044-01		1.0189098+01
68000.	7.6258971-05	9.6725273-05	8.2921682-01		1.0189127+01
68250.	7.3495981-05	9.3542713-05	8.2685250-01		1.0189155+01
68500.	7.0823710-05	9.0452234-05	8.2449759-01		1.0189182+01
68750.	6.8239514-05	8.7461643-05	8.2215177-01		1.0189209+01
69000.	6.5740776-05	8.4538598-05	8.1981555-01		1.0189234+01
69250.	6.3324967-05	8.1710993-05	8.1748433-01		1.0189259+01
69500.	6.0989643-05	7.8966647-05	8.1517062-01		1.0189283+01
69750.	5.8732398-05	7.6303607-05	8.1286105-01		1.0189308+01
70000.	5.6550893-05	7.3719777-05	8.1055986-01		1.0189328+01
70250.	5.4442887-05	7.1213272-05	8.0826616-01		1.0189349+01
70500.	5.2406144-05	6.8782071-05	8.0597997-01		1.0189370+01
70750.	5.0438531-05	6.6424386-05	8.0370061-01		1.0189390+01
71000.	4.8537948-05	6.4136308-05	8.0142615-01		1.0189409+01
71250.	4.6702366-05	6.1922023-05	7.9915792-01		1.0189428+01
71500.	4.4929806-05	5.9773899-05	7.9689310-01		1.0189446+01
71750.	4.3218328-05	5.7692086-05	7.9463198-01	2.8964400+01	1.0189464+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
72000.	4.2355436e-04	2.1439084e+02	2.1439084e+02	6.8824123e-05	2.0474928e-01	1.4091690e-05	2.9352707e+02
72250.	4.0730285e-04	2.1366394e+02	2.1366394e+02	6.6408946e-05	2.1159222e-01	1.4051532e-05	2.9302905e+02
72500.	3.9161809e-04	2.1293826e+02	2.1293826e+02	6.4068829e-05	2.1869265e-01	1.4011382e-05	2.9253101e+02
72750.	3.7648248e-04	2.1221310e+02	2.1221310e+02	6.1803108e-05	2.2605988e-01	1.3971203e-05	2.9203248e+02
73000.	3.6187895e-04	2.1148819e+02	2.1148819e+02	5.9609427e-05	2.3370430e-01	1.3930980e-05	2.9153326e+02
73250.	3.4779071e-04	2.1076309e+02	2.1076309e+02	5.7485878e-05	2.4163651e-01	1.3890687e-05	2.9103307e+02
73500.	3.3420166e-04	2.1003696e+02	2.1003696e+02	5.5430735e-05	2.4986640e-01	1.3850278e-05	2.9053129e+02
73750.	3.2109598e-04	2.0930991e+02	2.0930991e+02	5.3442018e-05	2.5840639e-01	1.3809759e-05	2.9002801e+02
74000.	3.0845853e-04	2.0858051e+02	2.0858051e+02	5.1518217e-05	2.6726563e-01	1.3767049e-05	2.8952223e+02
74250.	2.9627420e-04	2.0784900e+02	2.0784900e+02	4.9657363e-05	2.7645772e-01	1.3728162e-05	2.8901410e+02
74500.	2.8452069e-04	2.0711438e+02	2.0711438e+02	4.7857892e-05	2.8599339e-01	1.3687039e-05	2.8850290e+02
74750.	2.7320778e-04	2.0637622e+02	2.0637622e+02	4.6118074e-05	2.9588522e-01	1.3645656e-05	2.8798832e+02
75000.	2.6229794e-04	2.0563354e+02	2.0563354e+02	4.4436379e-05	3.0614461e-01	1.3603958e-05	2.8746967e+02
75250.	2.5178569e-04	2.0488605e+02	2.0488605e+02	4.2811102e-05	3.1678523e-01	1.3561925e-05	2.8694670e+02
75500.	2.4165825e-04	2.0413251e+02	2.0413251e+02	4.1240812e-05	3.2781817e-01	1.3519488e-05	2.8641855e+02
75750.	2.3190299e-04	2.0337266e+02	2.0337266e+02	3.9723828e-05	3.3925835e-01	1.3476641e-05	2.8588512e+02
76000.	2.2250776e-04	2.0260577e+02	2.0260577e+02	3.8258777e-05	3.5111696e-01	1.3433306e-05	2.8534546e+02
76250.	2.1346064e-04	2.0183075e+02	2.0183075e+02	3.6844123e-05	3.6340812e-01	1.3389453e-05	2.8479917e+02
76500.	2.0475015e-04	2.0104657e+02	2.0104657e+02	3.5478506e-05	3.7614357e-01	1.3345012e-05	2.8424536e+02
76750.	1.9636510e-04	2.0025287e+02	2.0025287e+02	3.4160427e-05	3.8933816e-01	1.3299958e-05	2.8368373e+02
77000.	1.8829458e-04	1.9944855e+02	1.9944855e+02	3.288548e-05	4.0300428e-01	1.3254226e-05	2.8311344e+02
77250.	1.8052811e-04	1.9863269e+02	1.9863269e+02	3.161527e-05	4.1715487e-01	1.3207761e-05	2.8253380e+02
77500.	1.7305542e-04	1.9780426e+02	1.9780426e+02	3.0478061e-05	4.3180236e-01	1.3160498e-05	2.8194401e+02
77750.	1.6588657e-04	1.9696228e+02	1.9696228e+02	2.9336855e-05	4.4695932e-01	1.3112381e-05	2.8134330e+02
78000.	1.5395186e-04	1.9610583e+02	1.9610583e+02	2.8236629e-05	4.6263842e-01	1.3063349e-05	2.8073096e+02
78250.	1.5230199e-04	1.9523389e+02	1.9523389e+02	2.7176163e-05	4.7885131e-01	1.3013341e-05	2.8010616e+02
78500.	1.4590782e-04	1.9434546e+02	1.9434546e+02	2.6154228e-05	4.9566988e-01	1.2962294e-05	2.7946811e+02
78750.	1.3976058e-04	1.9434391e+02	1.9434391e+02	2.5169702e-05	5.1292312e-01	1.2910122e-05	2.7881571e+02
79000.	1.3385165e-04	1.9251422e+02	1.9251422e+02	2.4221368e-05	5.3080305e-01	1.2856776e-05	2.7814833e+02
79250.	1.2817279e-04	1.9156915e+02	1.9156915e+02	2.3308161e-05	5.4925663e-01	1.2802162e-05	2.7746476e+02
79500.	1.2271593e-04	1.9060278e+02	1.9060278e+02	2.2428976e-05	5.6829183e-01	1.2746204e-05	2.7676405e+02
79750.	1.1747330e-04	1.8961407e+02	1.8961407e+02	2.1582728e-05	5.8791617e-01	1.2688835e-05	2.7604529e+02
80000.	1.1243729e-04	1.8860150e+02	1.8860150e+02	2.0768398e-05	6.0813343e-01	1.2629957e-05	2.7530724e+02
80250.	1.0760055e-04	1.8756433e+02	1.8756433e+02	1.9984901e-05	6.2895071e-01	1.2569518e-05	2.7454920e+02
80500.	1.0295604e-04	1.8650031e+02	1.8650031e+02	1.9231362e-05	6.5036348e-01	1.2507376e-05	2.7376935e+02
80750.	9.8496865e-05	1.8540869e+02	1.8540869e+02	1.8506746e-05	6.7237514e-01	1.2443476e-05	2.7296697e+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR PRESSURE RATIO	WEIGHT DIFFERENCE	PRESSURE DIFFERENCE	metres	unitless	unitless	unitless	unitless	newtons cm ⁻²	
72000.	4.1566079-03	5.5674330-03	7.927355-01	2.896400+01	1.0189480+01	1.0189497+01	7.92500.	3.09971216-03	5.1182158-03	7.9011544-01	1.0189528+01	1.0189512+01	72250.
73000.	3.5533479-03	4.8220279-03	7.8333681-01	2.8954244-01	1.0189542+01	1.0189566+01	73250.	3.413011-03	4.6502913-03	7.8102719-01	1.0189566+01	1.0189566+01	73500.
74000.	3.0270945-03	4.1675404-03	7.7423149-01	2.8948015-01	1.0189566+01	1.0189566+01	74000.	3.0270945-03	4.1675404-03	7.7423149-01	1.0189566+01	1.0189566+01	74250.
75000.	2.5740962-03	3.5946492-03	7.6439434-01	2.894244-01	1.0189566+01	1.0189566+01	75000.	2.470329-03	3.3318272-05	7.6258494-01	1.0189566+01	1.0189566+01	75250.
75500.	2.470329-03	3.3318272-05	7.6258494-01	2.893729-05	1.0189566+01	1.0189566+01	75500.	2.470329-03	3.3318272-05	7.6258494-01	1.0189566+01	1.0189566+01	75750.
76000.	2.1336029-03	3.0949246-03	7.553268-01	2.8930498-03	1.0189566+01	1.0189566+01	76000.	2.0498248-03	2.9804669-03	7.5288688-01	1.0189566+01	1.0189566+01	76250.
76500.	2.0498248-03	2.9804669-03	7.5288688-01	2.8927055-03	1.0189566+01	1.0189566+01	76500.	1.93933-03	2.00933-03	7.5038268-01	1.0189566+01	1.0189566+01	76750.
77000.	1.8478543-03	2.06605026-03	7.4528306-01	2.8922754-03	1.0189566+01	1.0189566+01	77000.	1.77116370-03	2.05612434-03	7.4267032-01	1.0189566+01	1.0189566+01	77250.
77500.	1.8478543-03	2.06605026-03	7.4528306-01	2.8922754-03	1.0189566+01	1.0189566+01	77500.	1.77116370-03	2.05612434-03	7.4267032-01	1.0189566+01	1.0189566+01	77750.
78000.	1.5598955-03	2.2841880-03	7.3455011-01	2.89189745-03	1.0189566+01	1.0189566+01	78000.	1.4318861-03	2.1849021-03	7.3173185-01	1.0189566+01	1.0189566+01	78250.
78500.	1.5598955-03	2.2841880-03	7.3455011-01	2.89189745-03	1.0189566+01	1.0189566+01	78500.	1.4318861-03	2.1849021-03	7.3173185-01	1.0189566+01	1.0189566+01	78750.
79000.	1.3135712-03	1.9593754-03	7.2293452-01	2.8915284-03	1.01897720+01	1.01897720+01	79000.	1.2578410-03	1.8855020-03	7.1986356-01	1.01897720+01	1.01897720+01	79250.
79500.	1.3135712-03	1.9593754-03	7.2293452-01	2.8915284-03	1.01897720+01	1.01897720+01	79500.	1.2578410-03	1.8855020-03	7.1986356-01	1.01897720+01	1.01897720+01	79750.
80000.	1.1034186-03	1.6804191-03	7.10183051-01	2.8911829-03	1.0189806+01	1.0189806+01	80000.	1.034186-03	1.616986-03	7.0678203-01	1.0189806+01	1.0189806+01	80250.
80500.	1.034186-03	1.616986-03	7.0678203-01	2.8911829-03	1.0189806+01	1.0189806+01	80500.	9.6661229-03	1.4970940-03	6.99969474-01	1.0189806+01	1.0189806+01	80750.

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE newtons cm ⁻²	KINETIC TEMPERATURE degrees K	VIRTUAL TEMPERATURE degrees K	DENSITY kg m ⁻³	KINEMATIC VISCOSITY m ² sec ⁻¹	COEFFICIENT OF VISCOSITY newton-sec m ⁻²	SPEED OF SOUND m sec ⁻¹
81000.	9.4216307-05	1.8428339+02	1.8428339+02	1.7810079-05	6.9498529-01	1.2377743-05	2.67214104+02
81250.	9.0107961-05	1.8313770+02	1.8313770+02	1.7140487-05	7.1818625-01	1.2310063-05	2.67129008+02
81500.	8.6165552-05	1.8195465+02	1.8195465+02	1.6497125-05	7.4196597-01	1.2240305-05	2.67041242+02
81750.	8.2382921-05	1.8065000+02	1.8065000+02	1.5886820-05	7.6561405-01	1.2163173-05	2.66944122+02
82000.	7.8673815-05	1.8065000+02	1.8065000+02	1.5171552-05	8.0170920-01	1.2163173-05	2.66944122+02
82250.	7.5131972-05	1.8065000+02	1.8065000+02	1.4488538-05	8.3950306-01	1.2163173-05	2.66944122+02
82500.	7.1749837-05	1.8065000+02	1.8065000+02	1.3836323-05	8.7907547-01	1.2163173-05	2.66944122+02
82750.	6.8520199-05	1.8065000+02	1.8065000+02	1.3213516-05	9.2050990-01	1.2163173-05	2.66944122+02
83000.	6.5436167-05	1.8065000+02	1.8065000+02	1.2618788-05	9.6389390-01	1.2163173-05	2.66944122+02
83250.	6.2491170-05	1.8065000+02	1.8065000+02	1.2050871-05	1.0093189+00	1.2163173-05	2.66944122+02
83500.	5.9678927-05	1.8065000+02	1.8065000+02	1.1508555-05	1.0568810+00	1.2163173-05	2.66944122+02
83750.	5.6993445-05	1.8065000+02	1.8065000+02	1.0990683-05	1.1066803+00	1.2163173-05	2.66944122+02
84000.	5.4429003-05	1.8065000+02	1.8065000+02	1.0496153-05	1.1588219+00	1.2163173-05	2.66944122+02
84250.	5.1980134-05	1.8065000+02	1.8065000+02	1.0023911-05	1.2134159+00	1.2163173-05	2.66944122+02
84500.	4.9641622-05	1.8065000+02	1.8065000+02	9.5729491-06	1.2705774+00	1.2163173-05	2.66944122+02
84750.	4.7408486-05	1.8065000+02	1.8065000+02	9.1423085-06	1.3304268+00	1.2163173-05	2.66944122+02
85000.	4.5275970-05	1.8065000+02	1.8065000+02	8.7310716-06	1.3930905+00	1.2163173-05	2.66944122+02
85250.	4.3239533-05	1.8065000+02	1.8065000+02	8.3383627-06	1.4587003+00	1.2163173-05	2.66944122+02
85500.	4.1294839-05	1.8065000+02	1.8065000+02	7.9633458-06	1.5273947+00	1.2163173-05	2.66944122+02
85750.	3.9437748-05	1.8065000+02	1.8065000+02	7.6052221-06	1.5993185+00	1.2163173-05	2.66944122+02
86000.	3.7664308-05	1.8065000+02	1.8065000+02	7.2632298-06	1.6746231+00	1.2163173-05	2.66944122+02
86250.	3.5970746-05	1.8065000+02	1.8065000+02	6.9366412-06	1.7534671+00	1.2163173-05	2.66944122+02
86500.	3.4353456-05	1.8065000+02	1.8065000+02	6.6247612-06	1.8360167+00	1.2163173-05	2.66944122+02
86750.	3.2809000-05	1.8065000+02	1.8065000+02	6.3269263-06	1.9224457+00	1.2163173-05	2.66944122+02
87000.	3.1334090-05	1.8065000+02	1.8065000+02	6.0425029-06	2.0129361+00	1.2163173-05	2.66944122+02
87250.	2.9925591-05	1.8065000+02	1.8065000+02	5.7706844-06	2.1076784+00	1.2163173-05	2.66944122+02
87500.	2.8580567-05	1.8065000+02	1.8065000+02	5.5114969-06	2.2068720+00	1.2163173-05	2.66944122+02
87750.	2.7295980-05	1.8065000+02	1.8065000+02	5.2637891-06	2.3107257+00	1.2163173-05	2.66944122+02
88000.	2.6069278-05	1.8065000+02	1.8065000+02	5.0272304-06	2.4124579+00	1.2163173-05	2.66944122+02
88250.	2.4897793-05	1.8065000+02	1.8065000+02	4.8013198-06	2.5332977+00	1.2163173-05	2.66944122+02
88500.	2.3779037-05	1.8065000+02	1.8065000+02	4.5855776-06	2.6524842+00	1.2163173-05	2.66944122+02
88750.	2.2710632-05	1.8065000+02	1.8065000+02	4.3795451-06	2.7772684+00	1.2163173-05	2.66944122+02
89000.	2.1690308-05	1.8065000+02	1.8065000+02	4.1827847-06	2.9079126+00	1.2163173-05	2.66944122+02
89250.	2.0715899-05	1.8065000+02	1.8065000+02	3.9948785-06	3.0446914+00	1.2163173-05	2.66944122+02
89500.	1.9785334-05	1.8065000+02	1.8065000+02	3.8154273-06	3.1878926+00	1.2163173-05	2.66944122+02
89750.	1.8896638-05	1.8065000+02	1.8065000+02	3.6440501-06	3.3378170+00	1.2163173-05	2.66944122+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
61000.	9.2460446e-06	1.4407374e-05	6.9599856e-01	2.8964400e+01	1.0189810e+01
61250.	6.6428665e-06	1.3865711e-05	6.9219290e-01		1.0189814e+01
61500.	8.4559726e-06	1.3345267e-05	6.8827047e-01		1.0189818e+01
61750.	8.0847593e-06	1.2851563e-05	6.8393330e-01		1.0189822e+01
62000.	7.7207611e-06	1.2272951e-05	6.8393330e-01		1.0189825e+01
62250.	7.3731776e-06	1.1720431e-05	6.8393330e-01		1.0189829e+01
62500.	7.0412672e-06	1.1192624e-05	6.8393330e-01		1.0189832e+01
62750.	6.7243222e-06	1.0689008e-05	6.8393330e-01		1.0189836e+01
63000.	6.4216666e-06	1.0207905e-05	6.8393330e-01		1.0189839e+01
63250.	6.1326554e-06	9.748418e-06	6.8393330e-01		1.0189842e+01
63500.	5.8566721e-06	9.3097877e-06	6.8393330e-01		1.0189844e+01
63750.	5.5931288e-06	8.908583e-06	6.8393330e-01		1.0189847e+01
64000.	5.3414637e-06	8.4908106e-06	6.8393330e-01		1.0189850e+01
64250.	5.1011407e-06	8.01087923e-06	6.8393330e-01		1.0189852e+01
64500.	4.8716476e-06	7.7439892e-06	6.8393330e-01		1.0189854e+01
64750.	4.6524958e-06	7.3956247e-06	6.8393330e-01		1.0189857e+01
65000.	4.4432185e-06	7.0629566e-06	6.8393330e-01		1.0189859e+01
65250.	4.2433700e-06	6.7452767e-06	6.8393330e-01		1.0189861e+01
65500.	4.0525248e-06	6.4419086e-06	6.8393330e-01		1.0189863e+01
65750.	3.8702767e-06	6.1522063e-06	6.8393330e-01		1.0189865e+01
66000.	3.6962378e-06	5.8755534e-06	6.8393330e-01		1.0189866e+01
66250.	3.5300378e-06	5.6113611e-06	6.8393330e-01		1.0189868e+01
66500.	3.3713228e-06	5.3590674e-06	6.8393330e-01		1.0189870e+01
66750.	3.2197555e-06	5.1181353e-06	6.8393330e-01		1.0189871e+01
67000.	3.0750132e-06	4.8880625e-06	6.8393330e-01		1.0189873e+01
67250.	2.9367883e-06	4.6683297e-06	6.8393330e-01		1.0189874e+01
67500.	2.8047867e-06	4.4584994e-06	6.8393330e-01		1.0189875e+01
67750.	2.6787279e-06	4.2581158e-06	6.8393330e-01		1.0189877e+01
68000.	2.5583438e-06	4.0667528e-06	6.8393330e-01		1.0189878e+01
68250.	2.4433785e-06	3.8840035e-06	6.8393330e-01		1.0189879e+01
68500.	2.3335879e-06	3.7094801e-06	6.8393330e-01		1.0189880e+01
68750.	2.2287386e-06	3.5428111e-06	6.8393330e-01		1.0189881e+01
69000.	2.1286077e-06	3.3836427e-06	6.8393330e-01		1.0189882e+01
69250.	2.0329827e-06	3.2316370e-06	6.8393330e-01		1.0189883e+01
69500.	1.9416605e-06	3.0864708e-06	6.8393330e-01		1.0189884e+01
69750.	1.8544471e-06	2.9478361e-06	6.8393330e-01		1.0189885e+01

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

2.8964400e+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
90000.	1.8049200-05	1.8065000+02	1.8045000+02	3.4806292-06	1.2163173-05	2.6944122+02
91000.	1.8541800-05	1.8359646+02	1.8365000+C2	2.8532947-06	1.2340215-05	2.7166927+02
92000.	1.2573282-05	1.8654122+02	1.8665000+02	2.3467045-06	1.2516127-05	2.7387920+02
93000.	1.0540546-05	1.8948421+02	1.8965000+02	1.9361901-06	1.2690922-05	2.7607143+02
94000.	8.8614225-06	1.9242545+02	1.9265000+02	1.6024046-06	1.2846414-05	2.7824640+02
95000.	7.4701982-06	1.9536494+02	1.9565000+02	1.3301176-06	1.3037218-05	2.8040450+02
96000.	6.3141230-06	1.9836269+02	1.9865000+02	1.1072921-06	1.3208747-05	2.8254611+02
97000.	5.3507148-06	2.0123868+02	2.0165000+02	9.2438170-07	1.3379216-05	2.8467162+02
98000.	4.5456466-06	2.0417293+02	2.0465000+02	7.7378743-07	1.3548638-05	2.8678136+02
99000.	3.8710884-06	2.0710543+02	2.0765000+02	6.49943981-07	1.3717028-05	2.8887571+02
100000.	3.35440799-06	2.1003618+02	2.1045000+02	5.4642031-07	1.3884397-05	2.9095497+02
101000.	2.8288700-06	2.1478336+02	2.1545000+02	4.5698430-07	1.4161117-05	2.9438778+02
102000.	2.4307590-06	2.1951949+02	2.2065000+02	3.8377415-07	1.4435101-05	2.9778102+02
103000.	2.0558842-06	2.2424458+02	2.2565000+02	3.2357107-07	1.4706408-05	3.0113603+02
104000.	1.8131082-06	2.2895861+02	2.3065000+02	2.7384703-07	1.4975027-05	3.0445407+02
105000.	1.5734398-06	2.3366160+02	2.3565000+02	2.3260574-07	1.5241223-05	3.0773633+02
106000.	1.3695853-06	2.3835354+02	2.4045000+02	1.9826268-07	1.5504842-05	3.1098396+02
107000.	1.1956024-06	2.4303443+02	2.4565000+02	1.6955390-07	1.5766006-05	3.1419801+02
108000.	1.0466290-06	2.4770427+02	2.5065000+02	1.4546643-07	1.60247767-05	3.1737953+02
109000.	9.1866954-07	2.5236307+02	2.5565000+02	1.2518471-07	1.6281177-05	3.2052946+02
110000.	8.0843999-07	2.5701081+02	2.6065000+02	1.0805076-07	1.6535285-05	3.2364874+02
111000.	7.1400513-07	2.6641333+02	2.7065000+02	9.1903288-08	1.7036783-05	3.2979880+02
112000.	6.3347397-07	2.7578200+02	2.8045000+02	7.8632390-08	1.7529632-05	3.3583626+02
113000.	5.6440663-07	2.8511685+02	2.9065000+02	6.7648712-08	1.8014180-05	3.4176707+02
114000.	5.0465583-07	2.9441785+02	3.0065000+02	5.8498391-08	1.8490756-05	3.4759671+02
115000.	4.5325523-07	3.0368503+02	3.1065000+02	5.0828725-08	1.8957675-05	3.5333018+02
116000.	4.0833553-07	3.1291837+02	3.2065000+02	4.4363283-08	1.9421230-05	3.5897208+02
117000.	3.6906139-07	3.2211787+02	3.3065000+02	3.8883723-08	1.9875702-05	3.6452668+02
118000.	3.3458269-07	3.3128355+02	3.4065000+02	3.4216282-08	2.0323356-05	3.6999789+02
119000.	3.0419729-07	3.4041538+02	3.5065000+02	3.0221725-08	2.0764442-05	3.7538937+02
120000.	2.7732500-07	3.4951336+02	3.6065000+02	2.6786033-08	2.1199197-05	3.8070451+02
121000.	2.5376953-07	3.6639207+02	3.8065000+02	2.3224769-08	2.2050607-05	3.9111815+02
122000.	2.3327920-07	3.8721781+02	4.0065000+02	2.0283767-08	2.2879253-05	4.0126163+02
123000.	2.1533043-07	4.0599063+02	4.2065000+02	1.7832912-08	2.3686639-05	4.1115493+02
124000.	1.9950839-07	4.2471051+02	4.4065000+02	1.572667-08	2.4474125-05	4.2081571+02
125000.	1.8548089-07	4.4337745+02	4.6065000+02	1.4027034-08	2.5242944-05	4.3025962+02
126000.	1.7297906-07	4.6199146+02	4.8065000+02	1.2537251-08	2.5994216-05	4.3950066+02
127000.	1.6178335-07	4.8055254+02	5.0065000+02	1.1257381-08	2.6728963-05	4.4855135+02
128000.	1.5171293-07	4.9906068+02	5.2065000+02	1.0151132-08	2.7448117-05	4.5742299+02
129000.	1.4261771-07	5.1751589+02	5.4065000+02	9.1895662-09	2.8152534-05	4.6612582+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY	VISCOSITY	MOLECULAR PRESSURE	WEIGHT	DIFFERENCE	METERS	UNITLESS	UNITLESS	UNITLESS	UNITLESS	NEWTONS CM-2
20000.	1.7712277-06	2.81556375-06	6.839333-01	2.8964100+01	1.0189986+01							
91000.	1.4761474-06	2.8081565-06	6.9388837-01	2.8955960+01	1.0189889+01							
92000.	1.2338365-06	1.983575-06	7.03727745-06	2.8947520+01	1.0189981+01							
93000.	1.0344107-06	1.56627213-06	7.1360555-01	2.8939080+01	1.0189893+01							
94000.	8.6962768-07	1.02962572-06	7.2337523-01	2.8930640+01	1.0189855+01							
95000.	7.3309799-07	1.0759479-06	7.3030801-01	2.892200+01	1.0189870+01							
96000.	6.1964999-07	8.9573844-07	7.4222527-01	2.8913760+01	1.0189898+01							
97000.	5.250963-07	7.177395-07	7.5231124-01	2.8905320+01	1.0189899+01							
98000.	4.4969380-07	6.259576-07	7.6299630-01	2.8896800+01	1.0189901+01							
100000.	3.2425035-07	4.4202439-07	7.8071251-01	2.8880000+01	1.0189901+01							
102000.	2.77619498-07	3.10459207-07	8.0168347-01	2.8861600+01	1.0189902+01							
103000.	2.0558242-07	2.21751507-07	8.269407-01	2.8878400+01	1.0189902+01							
104000.	1.7729183-07	2.2152718-07	8.4204733-01	2.8875200+01	1.0189902+01							
105000.	1.5411616-07	1.8816525-07	8.570116-01	2.8872000+01	1.0189902+01							
106000.	1.3491616-07	1.8816525-07	8.688100+01	2.8871522-01	1.0189902+01							
107000.	1.1733206-07	1.3715976-07	8.8656000+01	2.8865200+01	1.0189903+01							
108000.	1.05221235-07	1.17267434-07	8.9624000+01	2.8862400+01	1.0189903+01							
109000.	9.01549876-07	1.0126754-07	9.1548806-01	2.8859200+01	1.0189903+01							
110000.	7.9337351-08	8.2977118-08	9.29772955-01	2.8856000+01	1.0189903+01							
111000.	7.069357-08	7.434470-08	9.5757956-01	2.8851500+01	1.0189903+01							
112000.	6.2166924-08	6.3602728-08	9.8558397-01	2.8846200+01	1.0189903+01							
113000.	5.5388240-08	5.7242486-08	1.0323400+01	2.8841300+01	1.0189903+01							
114000.	4.954470-08	4.7321234-08	1.0379324+00	2.8837200+01	1.0189903+01							
115000.	4.0440814-08	4.1117642-08	1.0660996+00	2.8831500+01	1.0189904+01							
116000.	3.5887559-08	3.5894574-08	1.0929528+00	2.8826600+01	1.0189904+01							
117000.	3.06272559-08	3.0724212-08	1.09520528+00	2.8821500+01	1.0189904+01							
118000.	2.8034724-08	2.8362714-08	1.124772791+00	2.8816800+01	1.0189904+01							
119000.	2.4952812-08	2.494713-08	1.1675813+00	2.8811900+01	1.0189904+01							
120000.	2.215663-08	2.167035-08	1.1920260+00	2.8802000+01	1.0189904+01							
121000.	2.0404016-08	1.878756-08	1.2399022+00	2.8803170+01	1.0189904+01							
122000.	2.2693169-08	1.6408452-08	1.2699340+00	2.8804020+01	1.0189904+01							
123000.	2.1121743-08	1.442535-08	1.3316960+00	2.8795501+01	1.0189904+01							
124000.	1.952926-08	1.2759220-08	1.3761763+00	2.8787365+01	1.0189904+01							
125000.	1.8202417-08	1.134700-08	1.41419068+00	2.8784002+01	1.0189904+01							
126000.	1.67763-08	1.0661650-08	1.46161507+00	2.8784020+01	1.0189904+01							
127000.	1.55782-08	9.106619-08	1.5029654+00	2.8784020+01	1.0189904+01							
128000.	1.43385-08	8.211172-08	1.5434003+00	2.8772505+01	1.0189904+01							
129000.	1.31895-08	7.43385-08	1.5830124+00	2.8772505+01	1.0189904+01							

GEOMETRIC	PRESSURE	KINETIC TEMPERATURE	MOLCEULAR TEMPERATURE	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
130000.	1.03437216-07	5.3591817+02	5.6065000+02	8.349392-09	2.8842997-05
131000.	1.0287067-07	5.542651+02	5.8065000+02	7.6117506-09	2.9520227-05
132000.	1.02002376-07	5.7252532+02	6.0065000+02	6.9611934-09	3.0181490-05
133000.	1.01375528-07	5.908C760+02	6.2065000+02	6.3850254-09	3.08727388-09
134000.	1.01080000-07	6.0899793+02	6.4065000+02	5.8727388-09	3.14728926-05
135000.	1.00720173-07	6.27103554+02	6.6065000+02	5.41520068-09	3.2101396-05
136000.	9.76111978-08	6.4522521+02	6.8065000+02	5.0061726-09	3.2722494-05
137000.	9.3288464-08	6.6325155+02	7.0065000+02	4.6383816-09	3.3033962-05
138000.	8.9394525-08	6.812305+02	7.2065000+02	4.9179366-09	3.3940400-05
139000.	8.5197938-08	6.9915663+02	7.4065000+02	4.0073180-09	3.4532020-05
140000.	8.1570390-08	7.1702956+02	7.6065000+02	3.5119495-09	3.5181549+02
141000.	7.8186963-08	7.34849395+02	7.8065000+02	3.4891196-09	3.55894946-05
142000.	7.5025559-08	7.5261663+02	8.0065000+02	3.264060-09	3.6255957-05
143000.	7.2066584-08	7.70306500+02	8.2065000+02	3.0592142-09	3.68428064+02
144000.	6.9292605-08	7.8715064+02	8.4065000+02	2.8715064-09	3.7236603-05
145000.	6.6688048-08	8.0565000+02	8.6065000+02	2.69934949-09	3.7910175-05
146000.	6.4238968-08	8.231355+02	8.8065000+02	2.54165500+02	3.8471566-05
147000.	6.192846-08	8.4235522+02	9.0065000+02	2.395526-09	3.9197794-05
148000.	5.9794545-08	8.6216212+02	9.2065000+02	2.262152-09	3.97950205-05
149000.	5.7705619-08	8.7705619+02	9.4065000+02	2.1371145-09	4.0019922-05
150000.	5.5766306-08	8.92284545+02	9.6065000+02	2.01222947-09	4.05317269-05
151000.	5.3920340-08	9.0595000+02	9.8065000+02	1.89252947-09	4.0911818-05
152000.	5.2162807-08	9.19548242+02	9.9065000+02	1.7343926-09	4.1288662-05
153000.	5.0488206-08	9.3195483+02	1.00565000+03	1.7489639-09	4.1662388-05
154000.	4.8891496-08	9.4494464+02	1.00565000+03	1.668763-09	4.1940104-09
155000.	4.7367906-08	9.5794505+02	1.00565000+03	1.593317-09	4.200747-09
156000.	4.5913187-08	9.708303+02	1.00565000+03	1.522272-09	4.226551-05
157000.	4.4523555-08	9.837361+02	1.00565000+03	1.4554928-09	4.3127434-05
158000.	4.3194386-08	9.9621386+02	1.00565000+03	1.3924513-09	4.348656-05
159000.	4.1923098-08	1.00956500+03	1.00565000+03	1.3329666-09	4.3842970-05
160000.	4.0705497-08	1.02228270+03	1.01106500+03	1.2776272-09	4.4193560-05
161000.	3.9537190-08	1.03045849+03	1.01206500+03	1.229061-09	4.4431075-05
162000.	3.8112689-08	1.03866500+03	1.01306500+03	1.1835437-09	4.46664298-05
163000.	3.6287170-08	1.05494973+03	1.01406500+03	1.1490104-09	4.4940104-09
164000.	3.4739976-08	1.06309473+03	1.01506500+03	1.0986203-09	4.512735-05
165000.	3.3282442-08	1.06309477+03	1.01606500+03	1.05894979-09	4.535278-05
166000.	3.1806526-08	1.07120349+03	1.01706500+03	1.02111355-09	4.558050+02
167000.	3.03360526-08	1.07929191+03	1.01806500+03	9.8493996-10	4.5881982-05
168000.	2.88019019-08	1.08721203+03	1.01906500+03	9.5032585-10	4.60409465-05
169000.	2.7411643-08	1.0954267+03	1.02006500+03	9.1720918-10	4.6266101-05
170000.	2.6073190-08	1.09673194+03	1.01906500+03	9.052585-10	4.6462957+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	DENSITY	RATIO	MOLAR	WEIGHT	PRESSURE DIFFERENCE	meters	unitless	unitless	unitless	newtons cm ⁻²
130000.	1.03186793-08	6.15742046-09	1.6213722+00	2.7686700+01	1.0189904+01						
131000.	1.0250624-08	6.1574657-09	1.6599178+00	2.7649300+01	1.0189904+01						
132000.	1.01778694-08	5.96312201-09	1.6927917+00	2.7610040+01	1.0189904+01						
133000.	1.01163529-08	5.916511356-09	1.7339935+00	2.7551710+00	1.0189904+01						
134000.	1.0059726-08	5.94750551+00	1.7300551+00	2.7533900+01	1.0189904+01						
135000.	1.00178773-08	5.94808927-09	1.7351710+00	2.7533900+01	1.0189904+01						
136000.	9.589866-08	4.0380927-09	1.655063+00	2.7456720+01	1.0189904+01						
137000.	9.1549894-09	3.7525177-09	1.6746857+00	2.7475217-09	1.0189904+01						
138000.	8.7434116-09	3.4894019-09	1.908491634+00	2.7380060+01	1.0189904+01						
139000.	8.3610198-09	3.2416199-09	1.9417301+00	2.7341730+01	1.0189904+01						
140000.	8.0050203-09	3.02225092-09	2.7303400+00	2.7303400+01	1.0189904+01						
141000.	7.6729831-09	2.8225050-09	2.006618200	2.7265070+01	1.0189904+01						
142000.	7.3622346-09	2.6407626-09	2.03086668+00	2.7220400+01	1.0189904+01						
143000.	7.0723516-09	2.4747175-09	2.0700860+00	2.7186410+01	1.0189904+01						
144000.	6.49001234-09	2.32228687-09	2.10168300+00	2.7150060+01	1.0189904+01						
145000.	6.0445217-09	2.1611772-09	2.1555632+00	2.7111727+01	1.0189904+01						
146000.	5.8041772-09	2.055562-09	2.1618913+00	2.7072312+01	1.0189904+01						
147000.	6.0777860-09	1.9317225-09	2.1917225+00	2.7035090+01	1.0189904+01						
148000.	5.8664475-09	1.8211941-09	2.212211941+00	2.69292752-09	1.0189904+01						
149000.	5.6630188-09	1.7286861-09	2.2503140+00	2.6958430+01	1.0189904+01						
150000.	5.4727017-09	1.6359525-09	2.2790951+00	2.6920000+01	1.0189904+01						
151000.	5.215454-09	1.5557455-09	2.3004552+00	2.6894000+01	1.0189904+01						
152000.	5.11190675-09	1.4838355-09	2.3216552+00	2.6842000+01	1.0189904+01						
153000.	4.9547283-09	1.4141565-09	2.3426996+00	2.6842000+01	1.0189904+01						
154000.	4.7803030-09	1.3493453-09	2.3631233+00	2.6816000+01	1.0189904+01						
155000.	4.6051535-09	1.2887256-09	2.3841941+00	2.6794225+00	1.0189904+01						
156000.	4.5055752-09	1.2315165-09	2.4055695+00	2.6769469+00	1.0189904+01						
157000.	4.3693498-09	1.1774165-09	2.4250498+00	2.6738000+01	1.0189904+01						
158000.	4.2389339-09	1.1264165-09	2.4452428+00	2.6720000+01	1.0189904+01						
159000.	4.1141798-09	1.076724967-09	2.4652834+00	2.6686000+01	1.0189904+01						
160000.	3.9946890-09	1.0325289-09	2.4851239+00	2.6660000+01	1.0189904+01						
161000.	3.8800356-09	9.9424302-10	2.4983524+00	2.6634000+01	1.0189904+01						
162000.	3.7986812-09	9.5742717-10	2.51116666+00	2.6608000+01	1.0189904+01						
163000.	3.6610940-09	9.222778-09	2.525172+00	2.6580200+01	1.0189904+01						
164000.	3.5610940-09	8.8872337-10	2.53725053+00	2.6556000+01	1.0189904+01						
165000.	3.4624901-09	8.5667107-10	2.5504316+00	2.6530000+01	1.0189904+01						
166000.	3.3674611-09	8.2604242-10	2.5632972+00	2.6504000+01	1.0189904+01						
167000.	3.2758430-09	7.9676022+00	2.5761022+00	2.6478000+01	1.0189904+01						
168000.	3.1874873-09	7.6889462+00	2.6452000+01	2.6452000+01	1.0189904+01						
169000.	3.1022551-09	7.419178-10	2.6426000+01	2.6426000+01	1.0189904+01						

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE newtons cm ⁻²	KINETIC TEMPERATURE degrees K	MOLECULAR TEMPERATURE degrees K	DENSITY kg m ⁻³	COEFFICIENT OF VISCOSITY newton-sec m ⁻²	SPEED OF SOUND m sec ⁻¹
170000.	3.0773599-08	1.1034635+03	1.2106500+03	8.8551810-10	4.6490709-05	6.9751629+02
171000.	2.9963516-08	1.1086877+03	1.2176500+03	8.5725111-10	4.6647331-05	6.9952991+02
172000.	2.9179445-08	1.1138966+03	1.2246500+03	8.3004723-10	4.6803460-05	7.0153775+02
173000.	2.8420425-08	1.1190961+03	1.2316500+03	8.0386111-10	4.6959102-05	7.0353986+02
174000.	2.7685565-08	1.1242804+03	1.2386500+03	7.7864876-10	4.7114260-05	7.0553629+02
175000.	2.6973787-08	1.1294514+03	1.2456500+03	7.5436869-10	4.7268939-05	7.0752708+02
176000.	2.6284421-08	1.1346091+03	1.2526500+03	7.3098157-10	4.7423144-05	7.0951228+02
177000.	2.5616562-08	1.1397535+03	1.2596500+03	7.0844921-10	4.7576877-05	7.1149196+02
178000.	2.4969442-08	1.1448646+03	1.2666500+03	6.8673624-10	4.7730144-05	7.1346613+02
179000.	2.4342296-08	1.1500024+03	1.2736500+03	6.6580828-10	4.7882948-05	7.1543486+02
180000.	2.3734392-08	1.1551070+03	1.2806500+03	6.4563255-10	4.8035295-05	7.1739819+02
181000.	2.3145053-08	1.1611962+03	1.2876500+03	6.2617842-10	4.8187185-05	7.1935616+02
182000.	2.2573597-08	1.1652762+03	1.2946500+03	6.0741590-10	4.8338626-05	7.2130882+02
183000.	2.2019390-08	1.1703408+03	1.3016500+03	5.8931679-10	4.84869619-05	7.2325620+02
184000.	2.1481826-08	1.1753922+03	1.3086500+03	5.7185438-10	4.8640170-05	7.2519835+02
185000.	2.0960309-08	1.1804302+03	1.3156500+03	5.5500266-10	4.8790280-05	7.2713531+02
186000.	2.0454282-08	1.1854550+03	1.3226500+03	5.3873732-10	4.8939956-05	7.2906713+02
187000.	1.9963203-08	1.1904665+03	1.3296500+03	5.2303486-10	4.9089199-05	7.3099384+02
188000.	1.9486552-08	1.1954647+03	1.3366500+03	5.0787293-10	4.9238015-05	7.3291549+02
189000.	1.9023827-08	1.2004496+03	1.3436500+03	4.9323001-10	4.9386404-05	7.3483212+02
190000.	1.8574202-08	1.2054212+03	1.3506500+03	4.7907675-10	4.9534373-05	7.3674375+02
191000.	1.8137534-08	1.2085380+03	1.3556500+03	4.6608853-10	4.9639809-05	7.3810618+02
192000.	1.7712809-08	1.2116448+03	1.3606500+03	4.5350153-10	4.9745032-05	7.3946609+02
193000.	1.7299654-08	1.2147417+03	1.3656500+03	4.4130186-10	4.9850046-05	7.4082351+02
194000.	1.6897719-08	1.2178287+03	1.3706500+03	4.2947637-10	4.9954850-05	7.4217845+02
195000.	1.6506656-08	1.2209507+03	1.3756500+03	4.1801220-10	5.0059444-05	7.4353091+02
196000.	1.6126127-08	1.2239729+03	1.3806500+03	4.0689676-10	5.0163831-05	7.4483092+02
197000.	1.5755815-08	1.2270301+03	1.3856500+03	3.9611845-10	5.0268014-05	7.4622849+02
198000.	1.5395401-08	1.2300773+03	1.3906500+03	3.8566561-10	5.0371991-05	7.4757363+02
199000.	1.5044591-08	1.2331147+03	1.3956500+03	3.7552739-10	5.0475764-05	7.4891635+02
200000.	1.4703093-08	1.2361421+03	1.4006500+03	3.6569315-10	5.0579335-05	7.5025667+02
201000.	1.4370620-08	1.2391596+03	1.4056500+03	3.5615256-10	5.0682705-05	7.5159460+02
202000.	1.4046909-08	1.2421672+03	1.4106500+03	3.4689596-10	5.0785874-05	7.5293015+02
203000.	1.3731694-08	1.2451648+03	1.4156500+03	3.3791384-10	5.0888845-05	7.5426334+02
204000.	1.3424721-08	1.2481526+03	1.4206500+03	3.2919703-10	5.0991617-05	7.5559417+02
205000.	1.3125742-08	1.2511304+03	1.4256500+03	3.2073675-10	5.1094193-05	7.5692267+02
206000.	1.2834527-08	1.2540943+03	1.4306500+03	3.1252462-10	5.1196522-05	7.5824883+02
207000.	1.2550845-08	1.2570562+03	1.4356500+03	3.0455248-10	5.1298758-05	7.5957269+02
208000.	1.2274471-08	1.2600042+03	1.4406500+03	2.9681241-10	5.1400749-05	7.6089423+02
209000.	1.2005194-08	1.2629423+03	1.4456500+03	2.8929689-10	5.1502547-05	7.6221349+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	VISCOSITY RATIO	MOLECULAR RATIO	PRESSURE DIFFERENCE	metres	unitless	unitless	unitless	newtons cm ⁻²
170000.	3.02000A7-G9	7.1633543-10	2.6400000+01	1.0189904+01	170000.	2.6111654+00	2.63729722+00	2.63729722+00	1.0189904+01
171000.	2.9405010-G9	6.9346899-10	2.6229722+00	1.0189904+01	171000.	2.6111654+00	2.63729722+00	2.63729722+00	1.0189904+01
172000.	2.890768-G9	6.5027941-10	2.6317500+00	1.0189904+01	172000.	2.6345000+01	2.6345000+01	2.6345000+01	1.0189904+01
173000.	2.7890768-G9	6.5027941-10	2.6405036+00	1.0189904+01	173000.	2.6317500+01	2.6405036+00	2.6405036+00	1.0189904+01
174000.	2.7169549-09	6.17146255-10	2.6317513+00	1.0189904+01	174000.	2.6345000+01	2.6317513+00	2.6317513+00	1.0189904+01
175000.	2.6631165-09	6.07146255-10	2.63729722+00	1.0189904+01	175000.	2.6400000+01	2.63729722+00	2.63729722+00	1.0189904+01
176000.	2.59132388-10	5.9132388-10	2.6626596+00	1.0189904+01	176000.	2.6665960+01	2.6626596+00	2.6626596+00	1.0189904+01
177000.	2.5139160-09	5.7309644-10	2.6752400+00	1.0189904+01	177000.	2.67627500+01	2.6752400+00	2.6752400+00	1.0189904+01
178000.	2.4504099-09	5.5553184-10	2.6835856+00	1.0189904+01	178000.	2.6820000+01	2.6835856+00	2.6835856+00	1.0189904+01
179000.	2.388641-09	5.3860227-10	2.69254507+00	1.0189904+01	179000.	2.69152500+01	2.69254507+00	2.69254507+00	1.0189904+01
180000.	2.3292066-A9	5.2225122-10	2.7010171+00	1.0189904+01	180000.	2.6125000+01	2.7010171+00	2.7010171+00	1.0189904+01
181000.	2.2713710-G9	5.0656439-10	2.70595579+00	1.0189904+01	181000.	2.6070000+01	2.70595579+00	2.70595579+00	1.0189904+01
182000.	2.2152940-G9	4.9136665-10	2.7180734+00	1.0189904+01	182000.	2.60402500+01	2.7180734+00	2.7180734+00	1.0189904+01
183000.	2.169026-G9	4.7602456-10	2.72724056+00	1.0189904+01	183000.	2.59602456+00	2.72724056+00	2.72724056+00	1.0189904+01
184000.	2.1061480-09	4.6259673-10	2.7350292+00	1.0189904+01	184000.	2.5815000+01	2.7350292+00	2.7350292+00	1.0189904+01
185000.	2.0595983-09	4.4986966-10	2.7430694+00	1.0189904+01	185000.	2.57960200+01	2.7430694+00	2.7430694+00	1.0189904+01
186000.	2.0073086-C9	4.2311663-10	2.7515661+00	1.0189904+01	186000.	2.5750000+01	2.7515661+00	2.7515661+00	1.0189904+01
187000.	1.9591159-09	4.0191159-10	2.7602780+00	1.0189904+01	187000.	2.5702500+01	2.7602780+00	2.7602780+00	1.0189904+01
188000.	1.9123391-09	3.9123391-10	2.7684126+00	1.0189904+01	188000.	2.5700000+01	2.7684126+00	2.7684126+00	1.0189904+01
189000.	1.8669270-09	3.8669270-10	2.7764545+00	1.0189904+01	189000.	2.5695000+01	2.7764545+00	2.7764545+00	1.0189904+01
190000.	1.8228044-09	3.8250000+01	2.7853101+00	1.0189904+01	190000.	2.5687500+01	2.7853101+00	2.7853101+00	1.0189904+01
191000.	1.7799514-G9	3.77039961-10	2.7912583+00	1.0189904+01	191000.	2.568215250+01	2.7912583+00	2.7912583+00	1.0189904+01
192000.	1.7382704-G9	3.66685779-10	2.7971554+00	1.0189904+01	192000.	2.56792500+01	2.7971554+00	2.7971554+00	1.0189904+01
193000.	1.6972724-09	3.60347579-10	2.7971554+00	1.0189904+01	193000.	2.56792500+01	2.7971554+00	2.7971554+00	1.0189904+01
194000.	1.6528205-G9	3.54980579-10	2.8030603+00	1.0189904+01	194000.	2.56735000+01	2.8030603+00	2.8030603+00	1.0189904+01
195000.	1.61930432-09	3.50194343-10	2.8083063+00	1.0189904+01	195000.	2.56735000+01	2.8083063+00	2.8083063+00	1.0189904+01
196000.	1.5692805-G9	3.4597242-10	2.8143434+00	1.0189904+01	196000.	2.56706250+01	2.8143434+00	2.8143434+00	1.0189904+01
197000.	1.5108185-09	3.4198222-10	2.8234038+00	1.0189904+01	197000.	2.5662000+01	2.8234038+00	2.8234038+00	1.0189904+01
198000.	1.4621820-09	3.3719251-10	2.8335370+00	1.0189904+01	198000.	2.5652000+01	2.8335370+00	2.8335370+00	1.0189904+01
199000.	1.4178149-09	3.32161975-10	2.8419719+00	1.0189904+01	199000.	2.5650000+01	2.8419719+00	2.8419719+00	1.0189904+01
200000.	1.37174531-09	3.26189471-10	2.8550500+01	1.0189904+01	200000.	2.5647500+01	2.8550500+01	2.8550500+01	1.0189904+01
201000.	1.33161250-09	3.21856175-10	2.8672507+00	1.0189904+01	201000.	2.56447500+01	2.8672507+00	2.8672507+00	1.0189904+01
202000.	1.29118752-09	2.98494583-10	2.8845250+01	1.0189904+01	202000.	2.56412500+01	2.8845250+01	2.8845250+01	1.0189904+01
203000.	1.2516941-09	2.94051662-10	2.9030250+01	1.0189904+01	203000.	2.56332500+01	2.9030250+01	2.9030250+01	1.0189904+01
204000.	1.21216169-09	2.89070399-10	2.9216543+00	1.0189904+01	204000.	2.5625000+01	2.9216543+00	2.9216543+00	1.0189904+01
205000.	1.17308115-09	2.84811175-10	2.9418750+01	1.0189904+01	205000.	2.56182500+01	2.9418750+01	2.9418750+01	1.0189904+01
206000.	1.13367537-09	2.79815222-10	2.9782753+00	1.0189904+01	206000.	2.5612500+01	2.9782753+00	2.9782753+00	1.0189904+01
207000.	1.09425783-09	2.7483570-10	2.9873000+01	1.0189904+01	207000.	2.56062500+01	2.9873000+01	2.9873000+01	1.0189904+01
208000.	1.05480409-09	2.69801637-10	2.9961875+00	1.0189904+01	208000.	2.55980409-09	2.9961875+00	2.9961875+00	1.0189904+01
209000.	1.01537453-09	2.64810783-10	2.9994040+01	1.0189904+01	209000.	2.55940409-09	2.9994040+01	2.9994040+01	1.0189904+01
210000.	9.6410203-09	2.59810783-10	2.9994040+01	1.0189904+01	210000.	2.55940409-09	2.9994040+01	2.9994040+01	1.0189904+01
211000.	9.20000A7-G9	7.1633543-10	2.6400000+01	1.0189904+01	211000.	2.6111654+00	2.6400000+01	2.6400000+01	1.0189904+01
212000.	8.7605101-G9	6.9346899-10	2.6229722+00	1.0189904+01	212000.	2.6111654+00	2.6229722+00	2.6229722+00	1.0189904+01
213000.	8.32000A7-G9	6.5027941-10	2.6175131+00	1.0189904+01	213000.	2.6111654+00	2.6175131+00	2.6175131+00	1.0189904+01
214000.	7.8805101-G9	6.07146255-10	2.61372513+00	1.0189904+01	214000.	2.6111654+00	2.61372513+00	2.61372513+00	1.0189904+01
215000.	7.4405010-G9	5.6405036-10	2.6093500+01	1.0189904+01	215000.	2.6111654+00	2.6093500+01	2.6093500+01	1.0189904+01
216000.	7.00000A7-G9	5.1633543-10	2.6040000+01	1.0189904+01	216000.	2.6111654+00	2.6040000+01	2.6040000+01	1.0189904+01
217000.	6.5605101-G9	4.69346899-10	2.5994040+01	1.0189904+01	217000.	2.6111654+00	2.5994040+01	2.5994040+01	1.0189904+01
218000.	6.12000A7-G9	4.2616543-10	2.5940000+01	1.0189904+01	218000.	2.6111654+00	2.5940000+01	2.5940000+01	1.0189904+01
219000.	5.68000A7-G9	3.8316543-10	2.5890000+01	1.0189904+01	219000.	2.6111654+00	2.5890000+01	2.5890000+01	1.0189904+01
220000.	5.24000A7-G9	3.4016543-10	2.5840000+01	1.0189904+01	220000.	2.6111654+00	2.5840000+01	2.5840000+01	1.0189904+01
221000.	4.80000A7-G9	2.9716543-10	2.5790000+01	1.0189904+01	221000.	2.6111654+00	2.5790000+01	2.5790000+01	1.0189904+01
222000.	4.36000A7-G9	2.5416543-10	2.5740000+01	1.0189904+01	222000.	2.6111654+00	2.5740000+01	2.5740000+01	1.0189904+01
223000.	3.92000A7-G9	2.11633543-10	2.5690000+01	1.0189904+01	223000.	2.6111654+00	2.5690000+01	2.5690000+01	1.0189904+01
224000.	3.48000A7-G9	1.6333543-10	2.5640000+01	1.0189904+01	224000.	2.6111654+00	2.5640000+01	2.5640000+01	1.0189904+01
225000.	3.04000A7-G9	1.1633543-10	2.5590000+01	1.0189904+01	225000.	2.6111654+00	2.5590000+01	2.5590000+01	1.0189904+01
226000.	2.60000A7-G9	6.9346899-10	2.5540000+01	1.0189904+01	226000.	2.6111654+00	2.5540000+01	2.5540000+01	1.0189904+01
227000.	2.16000A7-G9	3.77039961-10	2.5490000+01	1.0189904+01	227000.	2.6111654+00	2.5490000+01	2.5490000+01	1.0189904+01
228000.	1.72000A7-G9	3.4316543-10	2.5440000+01	1.0189904+01	228000.	2.6111654+00	2.5440000+01	2.5440000+01	1.0189904+01
229000.	1.28000A7-G9	3.0916543-10	2.5390000+01	1.0189904+01	229000.	2.6111654+00	2.5390000+01	2.5390000+01	1.0189904+01
230000.	8.40000A7-G9	2.7590000+01	2.5340000+01	1.0189904+01	230000.	2.6111654+00	2.7590000+01	2.7590000+01	1.0189904+01
231000.	4.00000A7-G9	2.4290768-10	2.5290000+01	1.0189904+01	231000.	2.6111654+00	2.4290768-10	2.4290768-10	1.0189904+01
232000.	0.40000A7-G9	1.0916543-10	2.5240000+01	1.0189904+01	232000.	2.6111654+00	1.0916543-10	1.0916543-10	1.0189904+01
233000.	0.04000A7-G9	1.0916543-10	2.5240000+01	1.0189904+01	233000.	2.6111654+00	1.0916543-10	1.0916543-10	1.0189904+01
234000.	0.00400A7-G9	1.0916543-10	2.5240000+01	1.0189904+01	234000.	2.6111654+00	1.0916543-10	1.0916543-10	1.0189904+01
235000.	0.00040A7-G9	1.0916543-10	2.5240000+01	1.0189904+01	235000.	2.6111654+00	1.0916543-10	1.0916543-10	1.0189904+01
236000.	0.000040A7-G9	1.0916543-10	2.5240000+01	1.0189904+01	236000.	2.6111654+00	1.0916543-10	1.0916543-10	1.0189904+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
210000.	1.1742803-08	1.2658705+03	1.4506500+03	2.8199857-10	5.1604155-05	7.6353047+02
211000.	1.1487101-08	1.2687867+03	1.4556500+03	2.7491044-10	5.1705571-05	7.6484518+02
212000.	1.1237897-08	1.2716770+03	1.4606500+03	2.6802581-10	5.1806798-05	7.6615764+02
213000.	1.0994995-08	1.2745954+03	1.4656500+03	2.6133797-10	5.1907837-05	7.6746785+02
214000.	1.0758220-08	1.2774839+03	1.4706500+03	2.5484074-10	5.2008688-05	7.6877583+02
215000.	1.0527393-08	1.2803624+03	1.4756500+03	2.4852795-10	5.2109353-05	7.7008157+02
216000.	1.0302346-08	1.2832310+03	1.4806500+03	2.4293979-10	5.2209833-05	7.7138512+02
217000.	1.0082916-08	1.2860697+03	1.4856500+03	2.3643261-10	5.2310128-05	7.7268646+02
218000.	9.8689373-09	1.2889384+03	1.4906500+03	2.3063885-10	5.2410240-05	7.7398563+02
219000.	9.6602625-09	1.2917773+03	1.4956500+03	2.2500735-10	5.2510169-05	7.7528261+02
220000.	9.45667372-09	1.2946062+03	1.5006500+03	2.1953292-10	5.2609917-05	7.7657742+02
221000.	9.2582194-09	1.2974252+03	1.5056500+03	2.1421072-10	5.2709484-05	7.7787009+02
222000.	9.0645670-09	1.3002342+03	1.5106500+03	2.0903594-10	5.2808871-05	7.7916059+02
223000.	8.8756443-09	1.3030334+03	1.5156500+03	2.0400402-10	5.2908081-05	7.8044897+02
224000.	8.6913244-09	1.3058225+03	1.5206500+03	1.9911063-10	5.3007112-05	7.8173523+02
225000.	8.5114734-09	1.3096318+03	1.5256500+03	1.9435136-10	5.3105966-05	7.8301938+02
226000.	8.3359701-09	1.3131712+03	1.5306500+03	1.8972214-10	5.3204645-05	7.8430142+02
227000.	8.01646950-09	1.3141306+03	1.5356500+03	1.8521897-10	5.3303148-05	7.8558137+02
228000.	7.9975339-09	1.3168801+03	1.5406500+03	1.8083807-10	5.3401478-05	7.8685923+02
229000.	7.8343722-09	1.3196197+03	1.5456500+03	1.7657564-10	5.3499634-05	7.8813503+02
230000.	7.6751999-09	1.3223493+03	1.5506500+03	1.7243033-10	5.3597617-05	7.8940877+02
231000.	7.5195949-09	1.3241963+03	1.5546500+03	1.6849987-10	5.3675881-05	7.9042627+02
232000.	7.3675768-09	1.3260353+03	1.5586500+03	1.6466975-10	5.3754036-05	7.9144247+02
233000.	7.2190553-09	1.3278662+03	1.5626500+03	1.6093719-10	5.3832081-05	7.9245737+02
234000.	7.0739410-09	1.3296891+03	1.5666500+03	1.5729945-10	5.3910019-05	7.9347098+02
235000.	6.9321437-09	1.3315039+03	1.5706500+03	1.5375381-10	5.3987848-05	7.9448328+02
236000.	6.7935823-09	1.3333106+03	1.5746500+03	1.5029778-10	5.4065570-05	7.9549430+02
237000.	6.6581715-09	1.3351094+03	1.5786500+03	1.4692878-10	5.4143184-05	7.9650404+02
238000.	6.5258030-09	1.3369000+03	1.5826500+03	1.4364444-10	5.4220692-05	7.9751249+02
239000.	6.3964880-09	1.3386826+03	1.5866500+03	1.4044239-10	5.4298094-05	7.9851968+02
240000.	6.2700608-09	1.3404572+03	1.5906500+03	1.3732034-10	5.4375389-05	7.9952559+02
241000.	6.1464784-09	1.3422237+03	1.5946500+03	1.3427610-10	5.4452581-05	8.0053024+02
242000.	6.0256694-09	1.3439822+03	1.5986500+03	1.3130754-10	5.4529666-05	8.0153363+02
243000.	5.905629-09	1.3457326+03	1.6026500+03	1.2841254-10	5.4606647-05	8.0253577+02
244000.	5.7920932-09	1.3474750+03	1.6066500+03	1.2558912-10	5.4683524-05	8.0353665+02
245000.	5.6791947-09	1.3492094+03	1.6106500+03	1.2283534-10	5.4760297-05	8.0453629+02
246000.	5.5688008-09	1.3509356+03	1.6146500+03	1.2014924-10	5.4836967-05	8.0554470+02
247000.	5.4608521-09	1.3526539+03	1.6186500+03	1.1752905-10	5.4913534-05	8.0653186+02
248000.	5.3552872-09	1.3543640+03	1.6226500+03	1.1497295-10	5.4989998-05	8.0752779+02
249000.	5.2520459-09	1.3560662+03	1.6266500+03	1.1247918-10	5.5068361-05	8.0852251+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE RATIO unitless	DENSITY RATIO unitless	VISCOOSITY RATIO unitless	MOLECULAR WEIGHT unitless	PRESSURE DIFFERENCE newtons cm ⁻²
210000.	1.1523959-09	2.2812133-10	2.9016936+00	2.5275000+01	1.0189904+01
211000.	1.1273022-09	2.2238742-10	2.9073962+00	2.5246250+01	1.0189904+01
212000.	1.1028461-09	2.1681814-10	2.9130882+00	2.5217500+01	1.0189904+01
213000.	1.0790087-09	2.1140040-10	2.9187896+00	2.5188750+01	1.0189904+01
214000.	1.0557725-09	2.0615214-10	2.9244404+00	2.5160000+01	1.0189904+01
215000.	1.0331200-09	2.0104544-10	2.9301008+00	2.5131250+01	1.0189904+01
216000.	1.0110347-09	1.9608324-10	2.9357503+00	2.5102500+01	1.0189904+01
217000.	9.8950545-10	1.9126097-10	2.9413903+00	2.5073750+01	1.0189904+01
218000.	9.6650150-10	1.8657414-10	2.9470196+00	2.5045000+01	1.0189904+01
219000.	9.4802291-10	1.8201857-10	2.9526386+00	2.5016250+01	1.0189904+01
220000.	9.2804968-10	1.7759006-10	2.9582475+00	2.4987500+01	1.0189904+01
221000.	9.0856787-10	1.7328469-10	2.9636461+00	2.4958750+01	1.0189904+01
222000.	8.8956353-10	1.6909d59-10	2.9694346+00	2.4930000+01	1.0189904+01
223000.	8.7102335-10	1.6502803-10	2.9750131+00	2.4901250+01	1.0189904+01
224000.	8.5293487-10	1.6106955-10	2.9805817+00	2.4872500+01	1.0189904+01
225000.	8.3528495-10	1.5721956-10	2.9861402+00	2.4843750+01	1.0189904+01
226000.	8.1806169-10	1.5347477-10	2.9916889+00	2.4815000+01	1.0189904+01
227000.	8.0125338-10	1.4983196-10	2.9972277+00	2.4786250+01	1.0189904+01
228000.	7.8484879-10	1.4628005-10	3.0027568+00	2.4757500+01	1.0189904+01
229000.	7.6883670-10	1.4283998-10	3.0082761+00	2.4728750+01	1.0189904+01
230000.	7.5321611-10	1.3948665-10	3.0137857+00	2.4700000+01	1.0189904+01
231000.	7.3794561-10	1.3630713-10	3.0181865+00	2.4670860+01	1.0189904+01
232000.	7.2302710-10	1.3320877-10	3.0225811+00	2.4641720+01	1.0189904+01
233000.	7.0845174-10	1.3018933-10	3.0269696+00	2.4612580+01	1.0189904+01
234000.	6.9421076-10	1.2724660-10	3.0314520+00	2.4583440+01	1.0189904+01
235000.	6.8029529-10	1.2437638-10	3.0357283+00	2.4554300+01	1.0189904+01
236000.	6.6669737-10	1.2158263-10	3.0400966+00	2.4525160+01	1.0189904+01
237000.	6.5340865-10	1.1885730-10	3.0444628+00	2.4496020+01	1.0189904+01
238000.	6.4042144-10	1.1620045-10	3.0488211+00	2.4466880+01	1.0189904+01
239000.	6.2727299-10	1.1361017-10	3.0531734+00	2.4437740+01	1.0189904+01
240000.	6.1532088-10	1.1106460-10	3.0575197+00	2.4408600+01	1.0189904+01
241000.	6.0319296-10	1.0862198-10	3.0616602+00	2.4379460+01	1.0189904+01
242000.	5.9133720-10	1.0622057-10	3.0661946+00	2.4350320+01	1.0189904+01
243000.	5.7974667-10	1.0387668-10	3.0705233+00	2.4321180+01	1.0189904+01
244000.	5.6841490-10	1.0159469-10	3.0748461+00	2.4292040+01	1.0189904+01
245000.	5.5733544-10	9.9367034-11	3.0791630+00	2.4262900+01	1.0189904+01
246000.	5.4650178-10	9.7194128-11	3.0834241+00	2.4233760+01	1.0189904+01
247000.	5.3590810-10	9.5074534-11	3.0877795+00	2.4204620+01	1.0189904+01
248000.	5.2554834-10	9.3006789-11	3.0920790+00	2.4175480+01	1.0189904+01
249000.	5.1541661-10	9.0989470-11	3.0963729+00	2.4146340+01	1.0189904+01

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	Coefficient OF VISCOSITY	SPEED OF SOUND
metres	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)						
250000.	5.15077236-09	1.3594463+03	1.6306500+03	1.1004613-10	5.5192621-05	8.0951599+02
251000.	5.0523125-09	1.3594463+03	1.6346500+03	1.0767210-10	5.5212980-05	8.1050826+02
252000.	4.9552095-09	1.3611243+03	1.6386500+03	1.0426500+03	5.53709490-10	8.1248915+02
253000.	4.8612097-09	1.3627943+03	1.6426500+03	1.0309490-10	5.53709490-10	8.1247772+02
254000.	4.7682766-09	1.3636110+03	1.6465000+03	1.01886500+03	5.5446653-05	8.1149931+02
255000.	4.6702525-09	1.3656110+03	1.6505000+03	1.0049810-10	5.5522412-05	8.1146523+02
256000.	4.5898110-09	1.3676225+03	1.6546500+03	9.93633843-11	5.5582402-05	8.1154514+02
257000.	4.50898110-09	1.3696324+03	1.6586500+03	9.85206500+03	5.6227458-05	8.2322842+02
258000.	4.0213771-09	1.370510+03	1.66296500+03	9.81521590-11	5.69199805-05	8.2222070+02
259000.	3.946934939-09	1.3714969+03	1.67186500+03	9.78105950-11	5.76124927-11	8.21349409+02
260000.	3.85206264-09	1.372585+03	1.67706500+03	9.75033329-11	5.8049955-05	8.20263492+02
261000.	4.0175131-09	1.37374615+03	1.6846500+03	9.7146500+03	5.86721271-05	8.3010455+02
262000.	4.07974304-09	1.3754585+03	1.69746500+03	9.67249392-11	5.904955-05	8.3010455+02
263000.	4.0213771-09	1.3770510+03	1.71286500+03	9.6374615+03	5.96721271-05	8.3010455+02
264000.	3.946934939-09	1.3789518+03	1.7246500+03	9.5919455-05	6.03204880+02	8.30204880+02
265000.	3.85206264-09	1.3808510+03	1.7364500+03	9.549218-05	6.0869418-05	8.3030880+02
266000.	4.0175131-09	1.3827510+03	1.748222-11	5.9913573+02	6.142862-05	8.3040455+02
267000.	3.85320264-09	1.3849518+03	1.760500+03	7.01928422-11	5.99647602-05	8.2913573+02
268000.	4.0213771-09	1.387585+03	1.7710500+03	7.0426922-11	5.9973123+02	8.3040455+02
269000.	3.946934939-09	1.38949518+03	1.782500+03	7.0746514-11	5.9983049+02	8.3040455+02
270000.	3.85206264-09	1.3914969+03	1.7938500+03	7.106500+03	5.9983049+02	8.3040455+02
271000.	4.0175131-09	1.39349148+03	1.805100+03	7.146500+03	5.9983049+02	8.3040455+02
272000.	3.946934939-09	1.39549148+03	1.816300+03	7.186500+03	5.9983049+02	8.3040455+02
273000.	3.85206264-09	1.39749148+03	1.827300+03	7.226500+03	5.9983049+02	8.3040455+02
274000.	4.0213771-09	1.39949148+03	1.838300+03	7.266500+03	5.9983049+02	8.3040455+02
275000.	3.946934939-09	1.40149148+03	1.849300+03	7.306500+03	5.9983049+02	8.3040455+02
276000.	3.85206264-09	1.40349148+03	1.860300+03	7.346500+03	5.9983049+02	8.3040455+02
277000.	4.0213771-09	1.40549148+03	1.871300+03	7.386500+03	5.9983049+02	8.3040455+02
278000.	3.946934939-09	1.40749148+03	1.882300+03	7.426500+03	5.9983049+02	8.3040455+02
279000.	3.85206264-09	1.40949148+03	1.893300+03	7.466500+03	5.9983049+02	8.3040455+02
280000.	4.0213771-09	1.41149148+03	1.904300+03	7.506500+03	5.9983049+02	8.3040455+02
281000.	3.946934939-09	1.41349148+03	1.915300+03	7.546500+03	5.9983049+02	8.3040455+02
282000.	3.85206264-09	1.41549148+03	1.926300+03	7.586500+03	5.9983049+02	8.3040455+02
283000.	4.0213771-09	1.41749148+03	1.937300+03	7.626500+03	5.9983049+02	8.3040455+02
284000.	3.946934939-09	1.41949148+03	1.948300+03	7.666500+03	5.9983049+02	8.3040455+02
285000.	3.85206264-09	1.42149148+03	1.959300+03	7.706500+03	5.9983049+02	8.3040455+02
286000.	4.0213771-09	1.42349148+03	1.970300+03	7.746500+03	5.9983049+02	8.3040455+02
287000.	3.946934939-09	1.42549148+03	1.981300+03	7.786500+03	5.9983049+02	8.3040455+02
288000.	3.85206264-09	1.42749148+03	1.992300+03	8.026500+03	5.9983049+02	8.3040455+02
289000.	4.0213771-09	1.42949148+03	1.993300+03	8.066500+03	5.9983049+02	8.3040455+02
290000.	3.946934939-09	1.43149148+03	1.994300+03	8.106500+03	5.9983049+02	8.3040455+02
291000.	3.85206264-09	1.43349148+03	1.995300+03	8.146500+03	5.9983049+02	8.3040455+02
292000.	4.0213771-09	1.43549148+03	1.996300+03	8.186500+03	5.9983049+02	8.3040455+02
293000.	3.946934939-09	1.43749148+03	1.997300+03	8.226500+03	5.9983049+02	8.3040455+02
294000.	3.85206264-09	1.43949148+03	1.998300+03	8.266500+03	5.9983049+02	8.3040455+02
295000.	4.0213771-09	1.44149148+03	1.999300+03	8.306500+03	5.9983049+02	8.3040455+02
296000.	3.946934939-09	1.44349148+03	1.999300+03	8.346500+03	5.9983049+02	8.3040455+02
297000.	3.85206264-09	1.44549148+03	1.999300+03	8.386500+03	5.9983049+02	8.3040455+02
298000.	4.0213771-09	1.44749148+03	1.999300+03	8.426500+03	5.9983049+02	8.3040455+02
299000.	3.946934939-09	1.44949148+03	1.999300+03	8.466500+03	5.9983049+02	8.3040455+02
300000.	3.85206264-09	1.45149148+03	1.999300+03	8.506500+03	5.9983049+02	8.3040455+02
301000.	4.0213771-09	1.45349148+03	1.999300+03	8.546500+03	5.9983049+02	8.3040455+02
302000.	3.946934939-09	1.45549148+03	1.999300+03	8.586500+03	5.9983049+02	8.3040455+02
303000.	3.85206264-09	1.45749148+03	1.999300+03	8.626500+03	5.9983049+02	8.3040455+02
304000.	4.0213771-09	1.45949148+03	1.999300+03	8.666500+03	5.9983049+02	8.3040455+02
305000.	3.946934939-09	1.46149148+03	1.999300+03	8.706500+03	5.9983049+02	8.3040455+02
306000.	3.85206264-09	1.46349148+03	1.999300+03	8.746500+03	5.9983049+02	8.3040455+02
307000.	4.0213771-09	1.46549148+03	1.999300+03	8.786500+03	5.9983049+02	8.3040455+02
308000.	3.946934939-09	1.46749148+03	1.999300+03	8.826500+03	5.9983049+02	8.3040455+02
309000.	3.85206264-09	1.46949148+03	1.999300+03	8.866500+03	5.9983049+02	8.3040455+02
310000.	4.0213771-09	1.47149148+03	1.999300+03	8.906500+03	5.9983049+02	8.3040455+02
311000.	3.946934939-09	1.47349148+03	1.999300+03	8.946500+03	5.9983049+02	8.3040455+02
312000.	3.85206264-09	1.47549148+03	1.999300+03	8.986500+03	5.9983049+02	8.3040455+02
313000.	4.0213771-09	1.47749148+03	1.999300+03	9.026500+03	5.9983049+02	8.3040455+02
314000.	3.946934939-09	1.47949148+03	1.999300+03	9.066500+03	5.9983049+02	8.3040455+02
315000.	3.85206264-09	1.48149148+03	1.999300+03	9.106500+03	5.9983049+02	8.3040455+02
316000.	4.0213771-09	1.48349148+03	1.999300+03	9.146500+03	5.9983049+02	8.3040455+02
317000.	3.946934939-09	1.48549148+03	1.999300+03	9.186500+03	5.9983049+02	8.3040455+02
318000.	3.85206264-09	1.48749148+03	1.999300+03	9.226500+03	5.9983049+02	8.3040455+02
319000.	4.0213771-09	1.48949148+03	1.999300+03	9.266500+03	5.9983049+02	8.3040455+02
320000.	3.946934939-09	1.49149148+03	1.999300+03	9.306500+03	5.9983049+02	8.3040455+02
321000.	3.85206264-09	1.49349148+03	1.999300+03	9.346500+03	5.9983049+02	8.3040455+02
322000.	4.0213771-09	1.49549148+03	1.999300+03	9.386500+03	5.9983049+02	8.3040455+02
323000.	3.946934939-09	1.49749148+03	1.999300+03	9.426500+03	5.9983049+02	8.3040455+02
324000.	3.85206264-09	1.49949148+03	1.999300+03	9.466500+03	5.9983049+02	8.3040455+02
325000.	4.0213771-09	1.50149148+03	1.999300+03	9.506500+03	5.9983049+02	8.3040455+02
326000.	3.946934939-09	1.50349148+03	1.999300+03	9.546500+03	5.9983049+02	8.3040455+02
327000.	3.85206264-09	1.50549148+03	1.999300+03	9.586500+03	5.9983049+02	8.3040455+02
328000.	4.0213771-09	1.50749148+03	1.999300+03	9.626500+03	5.9983049+02	8.3040455+02
329000.	3.946934939-09	1.50949148+03	1.999300+03	9.666500+03	5.9983049+02	8.3040455+02
330000.	3.85206264-09	1.51149148+03	1.999300+03	9.706500+03	5.9983049+02	8.3040455+02
331000.	4.0213771-09	1.51349148+03	1.999300+03	9.746500+03	5.9983049+02	8.3040455+02
332000.	3.946934939-09	1.51549148+03	1.999300+03	9.786500+03	5.9983049+02	8.3040455+02
333000.	3.85206264-09	1.51749148+03	1.999300+03	9.826500+03	5.9983049+02	8.3040455+02
334000.	4.0213771-09	1.51949148+03	1.999300+03	9.866500+03	5.9983049+02	8.3040455+02
335000.	3.946934939-09	1.52149148+03	1.999300+03	9.906500+03	5.9983049+02	8.3040455+02
336000.	3.85206264-09	1.52349148+03	1.999300+03	9.946500+03	5.9983049+02	8.3040455+02
337000.	4.0213771-09	1.52549148+03	1.999300+03	9.986500+03	5.9983049+02	8.3040455+02
338000.	3.946934939-09	1.52749148+03	1.999300+03	1.0026500+04	5.9983049+02	8.3040455+02
339000.	3.85206264-09	1.52949148+03	1.999300+03	1.0086500+04	5.9983049+02	8.3040455+02
340000.	4.0213771-09	1.53149148+03	1.999300+03	1.0146500+04	5.9983049+02	8.3040455+02
341000.	3.946934939-09	1.53349148+03	1.999300+03	1.0206		

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE RATIO unitless	DENSITY RATIO unitless	VISCOOSITY RATIO unitless	MOLECULAR WEIGHT unitless	PRESSURE DIFFERENCE newtons cm ⁻²
250000.	5.0550757-10	8.9021262-11	3.1006616+00	2.4117200+01	1.0189904+01
251000.	4.9581551-10	8.7100805-11	3.1049434+00	2.4088060+01	1.0189904+01
252000.	4.8633525-10	8.5226839-11	3.1022202+00	2.4058920+01	1.0189904+01
253000.	4.7704150-10	8.3398103-11	3.1134913+00	2.4029780+01	1.0189904+01
254000.	4.6798936-10	8.1613410-11	3.1177567+00	2.4000640+01	1.0189904+01
255000.	4.5911383-10	7.9871569-11	3.1220166+00	2.3971500+01	1.0189904+01
256000.	4.5043025-10	7.8171463-11	3.1262708+00	2.3942360+01	1.0189904+01
257000.	4.4193387-10	7.6511969-11	3.1305195+00	2.3913220+01	1.0189904+01
258000.	4.3362030-10	7.4892030-11	3.1342627+00	2.3884080+01	1.0189904+01
259000.	4.2548493-10	7.3310574-11	3.1390004+00	2.3854940+01	1.0189904+01
260000.	4.1752370-10	7.176620-11	3.1432325+00	2.3825800+01	1.0189904+01
261000.	4.0973243-10	7.0259186-11	3.1474591+00	2.3796660+01	1.0189904+01
262000.	4.0210687-10	6.8787286-11	3.1516803+00	2.3767520+01	1.0189904+01
263000.	3.9464327-10	6.7350223-11	3.1558960+00	2.3738380+01	1.0189904+01
264000.	3.8733770-10	6.5946482-11	3.1601063+00	2.3709240+01	1.0189904+01
265000.	3.8018639-10	6.4575785-11	3.1643112+00	2.3680100+01	1.0189904+01
266000.	3.7318580-10	6.3237098-11	3.1685108+00	2.3650960+01	1.0189904+01
267000.	3.6633229-10	6.1929580-11	3.1727049+00	2.3621820+01	1.0189904+01
268000.	3.5962239-10	6.0652426-11	3.1768938+00	2.3592680+01	1.0189904+01
269000.	3.5305281-10	5.9404869-11	3.1810773+00	2.3563540+01	1.0189904+01
270000.	3.4662018-10	5.8186136-11	3.1852555+00	2.3534400+01	1.0189904+01
271000.	3.4032140-10	5.6995506-11	3.1894284+00	2.3505260+01	1.0189904+01
272000.	3.3415324-10	5.5832243-11	3.1935961+00	2.3476120+01	1.0189904+01
273000.	3.2811284-10	5.4695679-11	3.1977585+00	2.3446980+01	1.0189904+01
274000.	3.2219699-10	5.3585095-11	3.2019157+00	2.3417840+01	1.0189904+01
275000.	3.1640305-10	5.2499873-11	3.2060677+00	2.3388700+01	1.0189904+01
276000.	3.1072803-10	5.1439342-11	3.2102145+00	2.3359560+01	1.0189904+01
277000.	3.0516936-10	5.0429086-11	3.2143561+00	2.3330420+01	1.0189904+01
278000.	2.9972420-10	4.9389937-11	3.2184926+00	2.3301280+01	1.0189904+01
279000.	2.9439009-10	4.8399864-11	3.2226240+00	2.3272140+01	1.0189904+01
280000.	2.8916443-10	4.7432103-11	3.2267502+00	2.3243000+01	1.0189904+01
281000.	2.8404480-10	4.6486108-11	3.2308714+00	2.3213860+01	1.0189904+01
282000.	2.7902872-10	4.5561323-11	3.2349875+00	2.3184720+01	1.0189904+01
283000.	2.7411390-10	4.4657233-11	3.2390985+00	2.3155580+01	1.0189904+01
284000.	2.6929798-10	4.3773312-11	3.2432045+00	2.3126440+01	1.0189904+01
285000.	2.6457884-10	4.2909081-11	3.2473055+00	2.3097300+01	1.0189904+01
286000.	2.5995424-10	4.2064044-11	3.2519015+00	2.3068160+01	1.0189904+01
287000.	2.5542203-10	4.1237725-11	3.2554925+00	2.3039020+01	1.0189904+01
288000.	2.5098016-10	4.0429666-11	3.2595785+00	2.3009880+01	1.0189904+01
289000.	2.4662665-10	3.9639426-11	3.2636595+00	2.2980740+01	1.0189904+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
290000.	2.4696202-09	1.4189240+03	1.7906500+03	4.8045997-11	5.8113902-05	8.4830183+02
291000.	2.4269984-09	1.4202881+03	1.7946500+03	4.7111560-11	5.8186306-05	8.4924878+02
292000.	2.3852192-09	1.4216441+03	1.7986500+03	4.6197597-11	5.8258623-05	8.5019469+02
293000.	2.3442620-09	1.4229921+03	1.8026500+03	4.5303576-11	5.8330852-05	8.5113953+02
294000.	2.3041091-09	1.4243321+03	1.8066500+03	4.4429023-11	5.8402995-05	8.5208332+02
295000.	2.2647439-09	1.4256640+03	1.8106500+03	4.3573490-11	5.8475052-05	8.5302667+02
296000.	2.2261478-09	1.4269879+03	1.8146500+03	4.2736493-11	5.8547022-05	8.5396778+02
297000.	2.1883045-09	1.4283037+03	1.8186500+03	4.1917596-11	5.8618908-05	8.5490846+02
298000.	2.1511977-09	1.4296114+03	1.8226500+03	4.1116374-11	5.8690709-05	8.5584811+02
299000.	2.1148110-09	1.4309111+03	1.8266500+03	4.0332392-11	5.8762424-05	8.5678671+02
300000.	2.0790502-09	1.4321902+03	1.8306500+03	3.9563746-11	5.8834054-05	8.5772430+02
302000.	2.0096524-09	1.4339029+03	1.8372500+03	3.8105743-11	5.8952060-05	8.5926907+02
304000.	1.9428467-09	1.4355909+03	1.8438500+03	3.6707152-11	5.9069838-05	8.6081107+02
306000.	1.8785268-09	1.4372541+03	1.8504500+03	3.5365337-11	5.9187389-05	8.6235033+02
308000.	1.8165910-09	1.4388925+03	1.8570500+03	3.4077782-11	5.9304714-05	8.6388693+02
310000.	1.7569419-09	1.4405061+03	1.8636500+03	3.2842091-11	5.9421813-05	8.6542060+02
312000.	1.6994860-09	1.4420950+03	1.8702500+03	3.1655974-11	5.9518690-05	8.6695166+02
314000.	1.6441348-09	1.4436590+03	1.8768500+03	3.0517264-11	5.9655345-05	8.6848003+02
316000.	1.5908032-09	1.4451942+03	1.8834500+03	2.9423893-11	5.9771779-05	8.7000571+02
318000.	1.5394094-09	1.4467126+03	1.8900500+03	2.8373871-11	5.9887992-05	8.7152871+02
320000.	1.4898766-09	1.4482023+03	1.8966500+03	2.7365340-11	6.0003988-05	8.7304906+02
322000.	1.4421301-09	1.4496672+03	1.9032500+03	2.6396501-11	6.0119767-05	8.7456677+02
324000.	1.3960988-09	1.4511073+03	1.9098500+03	2.5465643-11	6.0235330-05	8.7608185+02
326000.	1.3517150-09	1.4525225+03	1.9164500+03	2.4571145-11	6.0350677-05	8.7759431+02
328000.	1.3089132-09	1.4539130+03	1.9230500+03	2.3711445-11	6.0468511-05	8.7910417+02
330000.	1.2676311-09	1.4552787+03	1.9296500+03	2.2885063-11	6.0580733-05	8.8061144+02
332000.	1.2278100-09	1.4566194+03	1.9342500+03	2.2090599-11	6.0695443-05	8.8211613+02
334000.	1.1893921-09	1.4579357+03	1.9428500+03	2.1326693-11	6.0809944-05	8.8361827+02
336000.	1.1523229-09	1.4592270+03	1.9494500+03	2.0592063-11	6.0924233-05	8.8511785+02
338000.	1.1165502-09	1.4604935+03	1.9560500+03	1.9885479-11	6.1038315-05	8.8661491+02
340000.	1.0820239-09	1.4617353+03	1.9626500+03	1.9205772-11	6.1152192-05	8.8810944+02
342000.	1.0486965-09	1.4629522+03	1.9692500+03	1.8551829-11	6.1265862-05	8.8960144+02
344000.	1.0165215-09	1.4641444+03	1.9758500+03	1.7922572-11	6.1379327-05	8.9109097+02
346000.	9.8545500-10	1.4653117+03	1.9824500+03	1.7316986-11	6.1492588-05	8.9257799+02
348000.	9.5545483-10	1.4664543+03	1.9890500+03	1.6734094-11	6.1605648-05	8.9406255+02
350000.	9.2648059-10	1.4675721+03	1.9956500+03	1.6172967-11	6.1718506-05	8.97554465+02
352000.	8.9849361-10	1.4686651+03	2.0022500+03	1.5632715-11	6.1831163-05	8.9702429+02
354000.	8.7145655-10	1.4697333+03	2.0088500+03	1.5112487-11	6.1943621-05	8.9850150+02
356000.	8.4533385-10	1.4707766+03	2.0154500+03	1.4611473-11	6.2055880-05	8.9997628+02
358000.	8.2009138-10	1.4717953+03	2.0220500+03	1.4128892-11	6.2167942-05	9.0144866+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

METERS	PRESSURE	DENSITY	RATIO	VISCOSITY	MOLECULAR	PRESSURE	WEIGHT	DIFFERENCE
	newtons cm ⁻²	unitless	unitless	unitless	unitless	newtons cm ⁻²	unitless	unitless
290000.	2.4235951-15	3.886659-11	3.2627357+00	2.2951600+01	1.0189904+01			
291000.	2.3817677-15	3.8110660-11	3.221069+00	2.2922460+01	1.0189904+01			
292000.	2.3407671-15	3.7371314-11	3.2758733+00	2.2893320+01	1.0189904+01			
293000.	2.3005573-15	3.6648100-11	3.2779347+00	2.2864100+01	1.0189904+01			
294000.	2.2611686-15	3.5940600-11	3.2835040+01	2.2835040+01	1.0189904+01			
295000.	2.2225370-15	3.5248431+00	3.2880431+00	2.2805090+01	1.0189904+01			
296000.	2.1836602-15	3.4571947-11	3.277267600+01	2.277267600+01	1.0189904+01			
297000.	2.1471020-15	3.3260980-11	3.2606940+01	2.2747620+01	1.0189904+01			
298000.	2.1111020-15	3.2601563-11	3.2601563-01	2.271849800+01	1.0189904+01			
299000.	2.0753984-15	3.2626660-11	3.0420190+00	2.2689340+01	1.0189904+01			
300000.	2.043040-15	3.2020494-11	3.0282979+00	2.2660000+01	1.0189904+01			
3012000.	1.9721945-15	3.1656288-11	3.0212848+00	2.2551200+01	1.0189904+01			
3024000.	1.9320804-15	3.1280625-11	3.0180502+00	2.2002200+01	1.0189904+01			
3032000.	1.912536-15	3.135317-11	3.0180500+00	2.1961600+01	1.0189904+01			
3042000.	1.8921105-15	3.1237055-11	3.0180500+00	2.1161500+01	1.0189904+01			
3052000.	1.8724984-15	3.15536413-11	3.04385782+00	2.1572000+01	1.0189904+01			
3062000.	1.8521952-15	3.15007409-11	3.04494700+00	2.1517600+01	1.0189904+01			
3074000.	1.8325770-15	3.14958375-11	3.04513500+00	2.1463200+01	1.0189904+01			
3086000.	1.8125080-15	3.14958375-11	3.04513500+00	2.1408800+01	1.0189904+01			
3098000.	1.7925770-15	3.14958375-11	3.04513500+00	2.1354900+01	1.0189904+01			
3112000.	1.7722512-15	3.14958375-11	3.04513500+00	2.1191200+01	1.0189904+01			
3124000.	1.752260-15	3.14958375-11	3.04513500+00	2.1735200+01	1.0189904+01			
3136000.	1.732260-15	3.14958375-11	3.04513500+00	2.1688000+01	1.0189904+01			
3148000.	1.712260-15	3.14958375-11	3.04513500+00	2.1626400+01	1.0189904+01			
3160000.	1.692260-15	3.14958375-11	3.04513500+00	2.15665784-01	1.0189904+01			
3172000.	1.672260-15	3.14958375-11	3.04513500+00	2.15252122-01	1.0189904+01			
3184000.	1.652260-15	3.14958375-11	3.04513500+00	2.14729497-01	1.0189904+01			
3196000.	1.632260-15	3.14958375-11	3.04513500+00	2.14257847-01	1.0189904+01			
3208000.	1.612260-15	3.14958375-11	3.04513500+00	2.1376850-01	1.0189904+01			
3220000.	1.592260-15	3.14958375-11	3.04513500+00	2.1326400-01	1.0189904+01			
3232000.	1.572260-15	3.14958375-11	3.04513500+00	2.12789450-01	1.0189904+01			
3244000.	1.552260-15	3.14958375-11	3.04513500+00	2.12325122-01	1.0189904+01			
3256000.	1.532260-15	3.14958375-11	3.04513500+00	2.11877171-01	1.0189904+01			
3268000.	1.512260-15	3.14958375-11	3.04513500+00	2.11429497-01	1.0189904+01			
3280000.	1.492260-15	3.14958375-11	3.04513500+00	2.1096004-01	1.0189904+01			
3292000.	1.472260-15	3.14958375-11	3.04513500+00	2.1051200-01	1.0189904+01			
3304000.	1.452260-15	3.14958375-11	3.04513500+00	2.1005400-01	1.0189904+01			
3316000.	1.432260-15	3.14958375-11	3.04513500+00	2.0959000-01	1.0189904+01			
3328000.	1.412260-15	3.14958375-11	3.04513500+00	2.0813000-01	1.0189904+01			
3340000.	1.392260-15	3.14958375-11	3.04513500+00	2.0667000-01	1.0189904+01			
3352000.	1.372260-15	3.14958375-11	3.04513500+00	2.0521000-01	1.0189904+01			
3364000.	1.352260-15	3.14958375-11	3.04513500+00	2.0375000-01	1.0189904+01			
3376000.	1.332260-15	3.14958375-11	3.04513500+00	2.0229000-01	1.0189904+01			
3388000.	1.312260-15	3.14958375-11	3.04513500+00	2.0083000-01	1.0189904+01			
3390000.	1.292260-15	3.14958375-11	3.04513500+00	1.9937000-01	1.0189904+01			
3402000.	1.272260-15	3.14958375-11	3.04513500+00	1.9800000-01	1.0189904+01			
3414000.	1.252260-15	3.14958375-11	3.04513500+00	1.9663000-01	1.0189904+01			
3426000.	1.232260-15	3.14958375-11	3.04513500+00	1.9526000-01	1.0189904+01			
3438000.	1.212260-15	3.14958375-11	3.04513500+00	1.9389000-01	1.0189904+01			
3450000.	1.192260-15	3.14958375-11	3.04513500+00	1.9252000-01	1.0189904+01			
3462000.	1.172260-15	3.14958375-11	3.04513500+00	1.9116000-01	1.0189904+01			
3474000.	1.152260-15	3.14958375-11	3.04513500+00	1.8980000-01	1.0189904+01			
3486000.	1.132260-15	3.14958375-11	3.04513500+00	1.8843000-01	1.0189904+01			
3498000.	1.112260-15	3.14958375-11	3.04513500+00	1.8706000-01	1.0189904+01			
3510000.	1.092260-15	3.14958375-11	3.04513500+00	1.8569000-01	1.0189904+01			
3522000.	1.072260-15	3.14958375-11	3.04513500+00	1.8432000-01	1.0189904+01			
3534000.	1.052260-15	3.14958375-11	3.04513500+00	1.8295000-01	1.0189904+01			
3546000.	1.032260-15	3.14958375-11	3.04513500+00	1.8158000-01	1.0189904+01			
3558000.	1.012260-15	3.14958375-11	3.04513500+00	1.8021000-01	1.0189904+01			
3570000.	9.9221945-15	3.14958375-11	3.04513500+00	1.7884000-01	1.0189904+01			
3582000.	9.7221945-15	3.14958375-11	3.04513500+00	1.7747000-01	1.0189904+01			
3594000.	9.5221945-15	3.14958375-11	3.04513500+00	1.7610000-01	1.0189904+01			
3606000.	9.3221945-15	3.14958375-11	3.04513500+00	1.7473000-01	1.0189904+01			
3618000.	9.1221945-15	3.14958375-11	3.04513500+00	1.7336000-01	1.0189904+01			
3630000.	8.9221945-15	3.14958375-11	3.04513500+00	1.7199000-01	1.0189904+01			
3642000.	8.7221945-15	3.14958375-11	3.04513500+00	1.7062000-01	1.0189904+01			
3654000.	8.5221945-15	3.14958375-11	3.04513500+00	1.6925000-01	1.0189904+01			
3666000.	8.3221945-15	3.14958375-11	3.04513500+00	1.6788000-01	1.0189904+01			
3678000.	8.1221945-15	3.14958375-11	3.04513500+00	1.6651000-01	1.0189904+01			
3690000.	7.9221945-15	3.14958375-11	3.04513500+00	1.6514000-01	1.0189904+01			
3702000.	7.7221945-15	3.14958375-11	3.04513500+00	1.6377000-01	1.0189904+01			
3714000.	7.5221945-15	3.14958375-11	3.04513500+00	1.6240000-01	1.0189904+01			
3726000.	7.3221945-15	3.14958375-11	3.04513500+00	1.6093000-01	1.0189904+01			
3738000.	7.1221945-15	3.14958375-11	3.04513500+00	1.5956000-01	1.0189904+01			
3750000.	6.9221945-15	3.14958375-11	3.04513500+00	1.5819000-01	1.0189904+01			
3762000.	6.7221945-15	3.14958375-11	3.04513500+00	1.5682000-01	1.0189904+01			
3774000.	6.5221945-15	3.14958375-11	3.04513500+00	1.5545000-01	1.0189904+01			
3786000.	6.3221945-15	3.14958375-11	3.04513500+00	1.5408000-01	1.0189904+01			
3798000.	6.1221945-15	3.14958375-11	3.04513500+00	1.5271000-01	1.0189904+01			
3810000.	5.9221945-15	3.14958375-11	3.04513500+00	1.5134000-01	1.0189904+01			
3822000.	5.7221945-15	3.14958375-11	3.04513500+00	1.4997000-01	1.0189904+01			
3834000.	5.5221945-15	3.14958375-11	3.04513500+00	1.4860000-01	1.0189904+01			
3846000.	5.3221945-15	3.14958375-11	3.04513500+00	1.4723000-01	1.0189904+01			
3858000.	5.1221945-15	3.14958375-11	3.04513500+00	1.4586000-01	1.0189904+01			
3870000.	4.9221945-15	3.14958375-11	3.04513500+00	1.4449000-01	1.0189904+01			
3882000.	4.7221945-15	3.14958375-11	3.04513500+00	1.4312000-01	1.0189904+01			
3894000.	4.5221945-15	3.14958375-11	3.04513500+00	1.4175000-01	1.0189904+01			
3906000.	4.3221945-15	3.14958375-11	3.04513500+00	1.4038000-01	1.0189904+01			
3918000.	4.1221945-15	3.14958375-11	3.04513500+00	1.3901000-01	1.0189904+01			
3930000.	3.9221945-15	3.14958375-11	3.04513500+00	1.3764000-01	1.0189904+01			
3942000.	3.7221945-15	3.14958375-11	3.04513500+00	1.3627000-01	1.0189904+01			
3954000.	3.5221945-15	3.14958375-11	3.04513500+00	1.3490000-01	1.0189904+01			
3966000.	3.3221945-15	3.14958375-11	3.04513500+00	1.3353000-01	1.0189904+01			
3978000.	3.1221945-15	3.14958375-11	3.04513500+00	1.3216000-01	1.0189904+01			
3990000.	2.9221945-15	3.14958375-11	3.04513500+00	1.3079000-01				

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE newtons cm ⁻²	KINETIC TEMPERATURE degrees K	MOLECULAR TEMPERATURE degrees K	DENSITY kg m ⁻³	COEFFICIENT OF VISCOSITY newton-sec m ⁻²	SPEED OF SOUND m sec ⁻¹
360000.	7.9569618E-10	1.4727691E+03	2.0286500E+03	1.3664002E-11	6.2279808E-05	9.0291863E+02
362000.	7.7211724E-10	1.4737581E+03	2.0352500E+03	1.3216098E-11	6.2391479E-05	9.0438621E+02
364000.	7.4932401E-10	1.4747023E+03	2.0418500E+03	1.2784495E-11	6.2502956E-05	9.0585143E+02
366000.	7.2728756E-10	1.4756218E+03	2.0484500E+03	1.2368543E-11	6.2614238E-05	9.0731425E+02
368000.	7.0598013E-10	1.4765164E+03	2.0550500E+03	1.1967621E-11	6.2725329E-05	9.0877474E+02
370000.	6.8537521E-10	1.4773863E+03	2.0616500E+03	1.1581137E-11	6.2836228E-05	9.1023289E+02
372000.	6.6544704E-10	1.4782313E+03	2.0682500E+03	1.1208519E-11	6.2946935E-05	9.1168869E+02
374000.	6.4617101E-10	1.4790516E+03	2.0748500E+03	1.0849220E-11	6.3057455E-05	9.1314217E+02
376000.	6.2752351E-10	1.4798471E+03	2.0814500E+03	1.0502720E-11	6.3167787E-05	9.1459335E+02
378000.	6.0948201E-10	1.4806178E+03	2.0880500E+03	1.0168520E-11	6.3277930E-05	9.1604224E+02
380000.	5.9202455E-10	1.4813637E+03	2.0946500E+03	9.8461400E-12	6.3387887E-05	9.1748883E+02
382000.	5.7513035E-10	1.4820848E+03	2.1012500E+03	9.5351233E-12	6.3497657E-05	9.1893314E+02
384000.	5.5877925E-10	1.4827811E+03	2.1078500E+03	9.2350303E-12	6.3607244E-05	9.2037519E+02
386000.	5.4295179E-10	1.4834526E+03	2.1144500E+03	8.9454378E-12	6.3716646E-05	9.2181499E+02
388000.	5.2762962E-10	1.4840993E+03	2.1210500E+03	8.6659468E-12	6.3825865E-05	9.2325253E+02
390000.	5.1279474E-10	1.4847213E+03	2.1276500E+03	8.3961681E-12	6.3934904E-05	9.2468784E+02
392000.	4.9843007E-10	1.4853184E+03	2.1342500E+03	8.1357333E-12	6.4043758E-05	9.2612092E+02
394000.	4.8451897E-10	1.4858908E+03	2.1408500E+03	7.8842847E-12	6.4152435E-05	9.2755180E+02
396000.	4.7104576E-10	1.4864384E+03	2.1474500E+03	7.6414855E-12	6.4260931E-05	9.2898046E+02
398000.	4.5799503E-10	1.4869611E+03	2.1540500E+03	7.4070068E-12	6.4369250E-05	9.3040694E+02
400000.	4.4537001E-10	1.4874591E+03	2.1606500E+03	7.1808243E-12	6.4477391E-05	9.3183123E+02
402000.	4.3310086E-10	1.4880479E+03	2.1658500E+03	6.9662399E-12	6.4562467E-05	9.3295187E+02
404000.	4.2120474E-10	1.4886223E+03	2.1710500E+03	6.7586691E-12	6.4647435E-05	9.3407116E+02
406000.	4.09666948E-10	1.4891824E+03	2.1762500E+03	6.5578667E-12	6.4732293E-05	9.3518911E+02
408000.	3.9848298E-10	1.4897281E+03	2.1814500E+03	6.3363591E-12	6.4817043E-05	9.3630573E+02
410000.	3.8763392E-10	1.4902594E+03	2.1866500E+03	6.1756156E-12	6.4901687E-05	9.3742103E+02
412000.	3.7711117E-10	1.4907764E+03	2.1918500E+03	5.9937183E-12	6.4986220E-05	9.3853498E+02
414000.	3.6690399E-10	1.4912790E+03	2.1970500E+03	5.8176856E-12	6.5070647E-05	9.3964763E+02
416000.	3.5700210E-10	1.4917673E+03	2.2022500E+03	5.6473137E-12	6.5154947E-05	9.4075896E+02
418000.	3.4739544E-10	1.4922412E+03	2.2074500E+03	5.4824035E-12	6.5239181E-05	9.4186897E+02
420000.	3.3807444E-10	1.4927007E+03	2.2126500E+03	5.3227660E-12	6.5323289E-05	9.4297768E+02
422000.	3.2902998E-10	1.4931459E+03	2.2178500E+03	5.1682208E-12	6.5407290E-05	9.4408509E+02
424000.	3.2025298E-10	1.4935767E+03	2.2230500E+03	5.0185899E-12	6.5491187E-05	9.4519119E+02
426000.	3.1173486E-10	1.4939931E+03	2.2282500E+03	4.8737047E-12	6.5574978E-05	9.4629601E+02
428000.	3.0346718E-10	1.4943952E+03	2.2334500E+03	4.7334005E-12	6.5658665E-05	9.4739954E+02
430000.	2.9544209E-10	1.4947829E+03	2.2386500E+03	4.5975230E-12	6.5742249E-05	9.4850179E+02
432000.	2.8765164E-10	1.4951563E+03	2.2438500E+03	4.4659185E-12	6.5825728E-05	9.4960275E+02
434000.	2.808852E-10	1.4955153E+03	2.2490500E+03	4.3384436E-12	6.5909103E-05	9.5070244E+02
436000.	2.7274532E-10	1.4958599E+03	2.2542500E+03	4.2149555E-12	6.5992375E-05	9.5180086E+02
438000.	2.6561517E-10	1.4961902E+03	2.2594500E+03	4.0953204E-12	6.6075546E-05	9.5289800E+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
360000.	7.8086719-11	1.1053426-11	3.5019839+00	2.1028000+01	1.0189904+01
362000.	7.5772768-11	1.0691096-11	3.5082632+00	2.0973600+01	1.0189904+01
364000.	7.3535724-11	1.0341953-11	3.5145315+00	2.0919200+01	1.0189904+01
366000.	7.1373347-11	1.0005471-11	3.5207889+00	2.0864800+01	1.0189904+01
368000.	6.9282313-11	9.6811473-12	3.5270355+00	2.0810400+01	1.0189904+01
370000.	6.7260223-11	9.3685029-12	3.5332713+00	2.0756000+01	1.0189904+01
372000.	6.5304544-11	9.0670751-12	3.5394964+00	2.0701600+01	1.0189904+01
374000.	6.3412864-11	8.7764222-12	3.5457109+00	2.0647200+01	1.0189904+01
376000.	6.1582867-11	8.4961225-12	3.5519148+00	2.0592800+01	1.0189904+01
378000.	5.9812340-11	8.2257734-12	3.5581082+00	2.0536400+01	1.0189904+01
380000.	5.8099130-11	7.9649856-12	3.5642910+00	2.0484000+01	1.0189904+01
382000.	5.6441194-11	7.7133903-12	3.5704634+00	2.0429600+01	1.0189904+01
384000.	5.4836557-11	7.4706314-12	3.5766254+00	2.0375200+01	1.0189904+01
386000.	5.3283307-11	7.2363671-12	3.5827771+00	2.0320800+01	1.0189904+01
388000.	5.1779646-11	7.0102742-12	3.5889185+00	2.0266400+01	1.0189904+01
390000.	5.0323804-11	6.7920381-12	3.5950497+00	2.0212000+01	1.0189904+01
392000.	4.8914109-11	6.5813607-12	3.6011706+00	2.0157600+01	1.0189904+01
394000.	4.7548924-11	6.3779526-12	3.6072814+00	2.0103200+01	1.0189904+01
396000.	4.6226712-11	6.1815414-12	3.6133822+00	2.0048800+01	1.0189904+01
398000.	4.4945961-11	5.9915610-12	3.6194729+00	1.9994400+01	1.0189904+01
400000.	4.3706987-11	5.8088918-12	3.6255537+00	1.9940000+01	1.0189904+01
402000.	4.2502938-11	5.6353048-12	3.6303375+00	1.9900000+01	1.0189904+01
404000.	4.1335497-11	5.4673915-12	3.6351152+00	1.9860000+01	1.0189904+01
406000.	4.0203467-11	5.3049534-12	3.6398686+00	1.9820000+01	1.0189904+01
408000.	3.9105666-11	5.1477952-12	3.6446523+00	1.9780000+01	1.0189904+01
410000.	3.8040979-11	4.9957333-12	3.6494117+00	1.9740000+01	1.0189904+01
412000.	3.7008314-11	4.8485864-12	3.6541651+00	1.9700000+01	1.0189904+01
414000.	3.6006181-11	4.7061876-12	3.6559124+00	1.9660000+01	1.0189904+01
416000.	3.5034883-11	4.5683661-12	3.6636537+00	1.9620000+01	1.0189904+01
418000.	3.4092121-11	4.4349628-12	3.6683890+00	1.9580000+01	1.0189904+01
420000.	3.3177392-11	4.3058249-12	3.6731184+00	1.9540000+01	1.0189904+01
422000.	3.2289801-11	4.1808063-12	3.6776418+00	1.9500000+01	1.0189904+01
424000.	3.1428459-11	4.0597631-12	3.6825593+00	1.9460000+01	1.0189904+01
426000.	3.0592522-11	3.9425590-12	3.6872708+00	1.9420000+01	1.0189904+01
428000.	2.9781162-11	3.8290606-12	3.6919765+00	1.9380000+01	1.0189904+01
430000.	2.8993609-11	3.7191432-12	3.6966764+00	1.9340000+01	1.0189904+01
432000.	2.8229082-11	3.6126624-12	3.7013704+00	1.9300000+01	1.0189904+01
434000.	2.7486865-11	3.5095622-12	3.7060586+00	1.9260000+01	1.0189904+01
436000.	2.6766231-11	3.4096671-12	3.7107416+00	1.9220000+01	1.0189904+01
438000.	2.6066503-11	3.3128889-12	3.7154177+00	1.9180000+01	1.0189904+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
440000.	2.5869126-10	1.4965061+03	2.2646500+03	3.9794075-12	6.6158614-05	9.5399390+02
442000.	2.5196713-10	1.4968076+03	2.2698500+03	3.8670918-12	6.6241580-05	9.5508853+02
444000.	2.4543644-10	1.4970948+03	2.2750500+03	3.7582516-12	6.6324445-05	9.5618192+02
446000.	2.3909321-10	1.4973676+03	2.2802500+03	3.6527717-12	6.6407207-05	9.5727405+02
448000.	2.3293140-10	1.4976261+03	2.2854500+03	3.5505373-12	6.6489869-05	9.5836494+02
450000.	2.2694544-10	1.4978702+03	2.2906500+03	3.4514413-12	6.6572431-05	9.5945458+02
452000.	2.2112992-10	1.4980999+03	2.2958500+03	3.3553803-12	6.6654892-05	9.6054298+02
454000.	2.1547934-10	1.4983153+03	2.3010500+03	3.2622508-12	6.6737255-05	9.6163017+02
456000.	2.0998883-10	1.4985163+03	2.3062500+03	3.1719590-12	6.6819517-05	9.6271611+02
458000.	2.0465324-10	1.4987029+03	2.3114500+03	3.0844085-12	6.6901681-05	9.6380085+02
460000.	1.9946788-10	1.4988752+03	2.3166500+03	2.9995098-12	6.6983746-05	9.6488435+02
462000.	1.9442817-10	1.4990331+03	2.3218500+03	2.9171770-12	6.7065712-05	9.6596644+02
464000.	1.8952953-10	1.4991767+03	2.3270500+03	2.8373239-12	6.7147581-05	9.6704774+02
466000.	1.8476770-10	1.4993058+03	2.3322500+03	2.7598706-12	6.7229352-05	9.6812760+02
468000.	1.8013853-10	1.4994207+03	2.3374500+03	2.6847388-12	6.7311025-05	9.6921628+02
470000.	1.7563794-10	1.4995212+03	2.3426500+03	2.6118527-12	6.7392602-05	9.7028374+02
472000.	1.7126204-10	1.4996073+03	2.3478500+03	2.5411396-12	6.7474083-05	9.7136002+02
474000.	1.6700703-10	1.4996790+03	2.3530500+03	2.4725287-12	6.7555467-05	9.7243510+02
476000.	1.6286930-10	1.4997364+03	2.3582500+03	2.4059531-12	6.7636754-05	9.7350900+02
478000.	1.5884530-10	1.4997794+03	2.3634500+03	2.3413466-12	6.7717947-05	9.7458172+02
480000.	1.5493162-10	1.4998081+03	2.3686500+03	2.2786463-12	6.7799044-05	9.7565326+02
482000.	1.5112492-10	1.4998223+03	2.3738500+03	2.2177908-12	6.7880046-05	9.7672362+02
484000.	1.4742202-10	1.4998223+03	2.3790500+03	2.1587211-12	6.7940953-05	9.7779281+02
486000.	1.4381985-10	1.4998079+03	2.3842500+03	2.1013810-12	6.8041766-05	9.7886082+02
488000.	1.4031534-10	1.4997790+03	2.3894500+03	2.0457142-12	6.8122486-05	9.7992768+02
490000.	1.3690566-10	1.4997359+03	2.3946500+03	1.9916687-12	6.8203111-05	9.8099338+02
492000.	1.3358800-10	1.4996784+03	2.3998500+03	1.9391934-12	6.8283643-05	9.8205791+02
494000.	1.3035960-10	1.4996065+03	2.4050500+03	1.8882377-12	6.8364083-05	9.8312130+02
496000.	1.2721787-10	1.4995202+03	2.4102500+03	1.8387546-12	6.8444429-05	9.8418354+02
498000.	1.2416023-10	1.4994197+03	2.4154500+03	1.7906974-12	6.8524683-05	9.8524464+02
500000.	1.2119000-10	1.4993047+03	2.4206500+03	1.7441046-12	6.8604845-05	9.8630458+02
502000.	1.1828959-10	1.4995694+03	2.4240500+03	1.6999757-12	6.8657209-05	9.8699701+02
504000.	1.1546412-10	1.4998289+03	2.4274500+03	1.6570459-12	6.8709534-05	9.8768896+02
506000.	1.1271155-10	1.5000833+03	2.4308500+03	1.6152808-12	6.8761820-05	9.8838042+02
508000.	1.1002987-10	1.5003325+03	2.4342500+03	1.5746469-12	6.8814067-05	9.8907140+02
510000.	1.0741709-10	1.5005765+03	2.4376500+03	1.5351110-12	6.8866275-05	9.8976189+02
512000.	1.0487133-10	1.5008154+03	2.4410500+03	1.4966417-12	6.8918444-05	9.9045190+02
514000.	1.0239080-10	1.5010491+03	2.4444500+03	1.4592092-12	6.8970575-05	9.9114143+02
516000.	9.9973650-11	1.5012777+03	2.4478500+03	1.4227825-12	6.9022667-05	9.9183048+02
518000.	9.7618166-11	1.5015510+03	2.4512500+03	1.3873333-12	6.9074720-05	9.9251906+02

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
440000.	2.5387016-11	3.2191216-12	3.7200886+00	1.9140000+01	1.0189904+01
442000.	2.4727134-11	3.1282645-12	3.724537+00	1.9100000+01	1.0189904+01
444000.	2.4086237-11	3.02168-12	3.7294132+00	1.9060000+01	1.0189904+01
446000.	2.3463735-11	2.9548914-12	3.7340669+00	1.9020000+01	1.0189904+01
448000.	2.2859038-11	2.8721893-12	3.7387150+00	1.8980000+01	1.0189904+01
450000.	2.2271598-11	2.7920261-12	3.7433574+00	1.8940000+01	1.0189904+01
452000.	2.1700883-11	2.7143161-12	3.7479594+00	1.8900000+01	1.0189904+01
454000.	2.1146357-11	2.6389814-12	3.7526255+00	1.8860000+01	1.0189904+01
456000.	2.0607538-11	2.5659404-12	3.7572511+00	1.8820000+01	1.0189904+01
458000.	2.0083923-11	2.4951168-12	3.7618711+00	1.8780000+01	1.0189904+01
460000.	1.9575049-11	2.4264384-12	3.7664856+00	1.8740000+01	1.0189904+01
462000.	1.9080471-11	2.3598357-12	3.7710946+00	1.8700000+01	1.0189904+01
464000.	1.8599736-11	2.2952390-12	3.7756980+00	1.8660000+01	1.0189904+01
466000.	1.8132428-11	2.2325635-12	3.7802960+00	1.8620000+01	1.0189904+01
468000.	1.7678138-11	2.1718060-12	3.7848885+00	1.8580000+01	1.0189904+01
470000.	1.7236466-11	2.1128451-12	3.7894756+00	1.8540000+01	1.0189904+01
472000.	1.6807031-11	2.0556421-12	3.7940572+00	1.8500000+01	1.0189904+01
474000.	1.6389460-11	2.0001397-12	3.7986334+00	1.8460000+01	1.0189904+01
476000.	1.5983399-11	1.9462837-12	3.8032041+00	1.8420000+01	1.0189904+01
478000.	1.5588498-11	1.8940206-12	3.8077696+00	1.8380000+01	1.0189904+01
480000.	1.5204424-11	1.8432995-12	3.8123297+00	1.8340000+01	1.0189904+01
482000.	1.4830488-11	1.7940707-12	3.8168844+00	1.8300000+01	1.0189904+01
484000.	1.4467459-11	1.7462866-12	3.8214338+00	1.8260000+01	1.0189904+01
486000.	1.4113956-11	1.6999017-12	3.8259779+00	1.8220000+01	1.0189904+01
488000.	1.3770036-11	1.6548703-12	3.8305168+00	1.8180000+01	1.0189904+01
490000.	1.3435422-11	1.6111504-12	3.8350503+00	1.8140000+01	1.0189904+01
492000.	1.3109839-11	1.5687006-12	3.8395767+00	1.8100000+01	1.0189904+01
494000.	1.2793016-11	1.5274805-12	3.8441018+00	1.8060000+01	1.0189904+01
496000.	1.2484697-11	1.4874513-12	3.8486196+00	1.8020000+01	1.0189904+01
498000.	1.2184631-11	1.4485757-12	3.8531323+00	1.7980000+01	1.0189904+01
500000.	1.1893144-11	1.4108847-12	3.8576398+00	1.7940000+01	1.0189904+01
502000.	1.1608509-11	1.3751868-12	3.8605842+00	1.7918000+01	1.0189904+01
504000.	1.1331228-11	1.3404590-12	3.8635264+00	1.7896000+01	1.0189904+01
506000.	1.1061106-11	1.3066733-12	3.8664665+00	1.7874000+01	1.0189904+01
508000.	1.0797930-11	1.2738027-12	3.8694043+00	1.7852000+01	1.0189904+01
510000.	1.0541521-11	1.2418204-12	3.8723399+00	1.7830000+01	1.0189904+01
512000.	1.0291689-11	1.2107008-12	3.8752734+00	1.7808000+01	1.0189904+01
514000.	1.0048260-11	1.1804200-12	3.8782047+00	1.7786000+01	1.0189904+01
516000.	9.8110492-12	1.1509527-12	3.8811338+00	1.7764000+01	1.0189904+01
518000.	9.5798906-12	1.1222763-12	3.8840608+00	1.7742000+01	1.0189904+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
520000.	9.5322633-11	1.5017193+03	2.4546500+03	1.3528331-12	6.9126735-05	9.9320715+02
522000.	9.3085454-11	1.5019323+03	2.4580500+03	1.3192553-12	6.9178711-05	9.9389478+02
524000.	9.0905027-11	1.5021402+03	2.4614500+03	1.2885736-12	6.9230649-05	9.9458192+02
526000.	8.8779845-11	1.5023429+03	2.4648500+03	1.2547628-12	6.9282550-05	9.9526859+02
528000.	8.6708356-11	1.5025405+03	2.4682500+03	1.2237975-12	6.9334411-05	9.9575479+02
530000.	8.4689118-11	1.5027329+03	2.4716500+03	1.1936538-12	6.9386235-05	9.9664051+02
532000.	8.2720709-11	1.5029201+03	2.4750500+03	1.1643084-12	6.9438021-05	9.9732577+02
534000.	8.0801808-11	1.5031C22+03	2.4784500+03	1.1357393-12	6.9489770-05	9.9801055+02
536000.	7.8931034-11	1.5032791+03	2.4818500+03	1.1079241-12	6.9541479-05	9.9869486+02
538000.	7.7107120-11	1.5034508+03	2.4852500+03	1.0808419-12	6.9593152-05	9.9937871+02
540000.	7.5328784-11	1.5036174+03	2.4886500+03	1.0544716-12	6.9644787-05	1.0000621+03
542000.	7.3594795-11	1.5037788+03	2.4920500+03	1.0287932-12	6.9696384-05	1.0007450+03
544000.	7.1904012-11	1.5039350+03	2.4954500+03	1.0037880-12	6.9747945-05	1.0014274+03
546000.	7.0255256-11	1.5040861+03	2.4988500+03	9.7943675-13	6.9799466-05	1.0021094+03
548000.	6.8647400-11	1.5042320+03	2.5022500+03	9.5572106-13	6.9850952-05	1.0027949+03
550000.	6.7079379-11	1.5043727+03	2.5056500+03	9.3262357-13	6.9902399-05	1.0034720+03
552000.	6.5550097-11	1.5045083+03	2.5090500+03	9.1012655-13	6.9953810-05	1.0041526+03
554000.	6.4058567-11	1.5046387+03	2.5124500+03	8.8821386-13	7.0005184-05	1.0048327+03
556000.	6.2603765-11	1.5047639+03	2.5158500+03	8.6686899-13	7.0056521-05	1.0055124+03
558000.	6.1184730-11	1.5048840+03	2.5192500+03	8.4607632-13	7.0107821-05	1.0061916+03
560000.	5.9800541-11	1.5049989+03	2.5226500+03	8.2582091-13	7.0159083-05	1.0068703+03
562000.	5.8450218-11	1.5051C87+03	2.5260500+03	8.0608705-13	7.0210310-05	1.0075486+03
564000.	5.7132932-11	1.5052133+03	2.5294500+03	7.8686126-13	7.0261500-05	1.0082265+03
566000.	5.5847810-11	1.5053127+03	2.5328500+03	7.6812948-13	7.0312652-05	1.0089039+03
568000.	5.4593977-11	1.5054070+03	2.5362500+03	7.4987769-13	7.0363769-05	1.0095808+03
570000.	5.3370635-11	1.5054960+03	2.5396500+03	7.3209300-13	7.0414848-05	1.0102573+03
572000.	5.2176982-11	1.5055800+03	2.5430500+03	7.1476259-13	7.0465892-05	1.0109333+03
574000.	5.1012251-11	1.5056588+03	2.5464500+03	6.9787412-13	7.0516900-05	1.0116089+03
576000.	4.9875496-11	1.5057323+03	2.5498500+03	6.8141564-13	7.0567871-05	1.0122840+03
578000.	4.8766580-11	1.5058008+03	2.5532500+03	6.6537536-13	7.0618806-05	1.0129587+03
580000.	4.7684185-11	1.5058640+03	2.5566500+03	6.4974186-13	7.0669704-05	1.0136329+03
582000.	4.6627816-11	1.5059221+03	2.5600500+03	6.3450403-13	7.0720547-05	1.0143067+03
584000.	4.5596817-11	1.5059751+03	2.5634500+03	6.1965139-13	7.0771394-05	1.0149800+03
586000.	4.4590527-11	1.5060229+03	2.5668500+03	6.0517346-13	7.0822185-05	1.0156529+03
588000.	4.3608318-11	1.5060654+03	2.5702500+03	5.9106021-13	7.0872940-05	1.0163253+03
590000.	4.2649554-11	1.5061029+03	2.5736500+03	5.7730160-13	7.0923660-05	1.0169973+03
592000.	4.1713649-11	1.5061352+03	2.5770500+03	5.6388831-13	7.0974344-05	1.0176688+03
594000.	4.0800003-11	1.5061623+03	2.5804500+03	5.5081087-13	7.1024992-05	1.0183399+03
596000.	3.9908072-11	1.5061842+03	2.5838500+03	5.3806062-13	7.1075606-05	1.0190106+03
598000.	3.9037277-11	1.5062010+03	2.5872500+03	5.2562847-13	7.1126184-05	1.0196808+03

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
520000.	9.3546154-12	1.0943675-12	3.8864866+00	1.7720000+01	1.0189904+01
522000.	9.1350668-12	1.0672050-12	3.889082+00	1.7698000+01	1.0189904+01
524000.	8.9210877-12	1.0407673-12	3.8928286+00	1.7676000+01	1.0189904+01
526000.	8.7125300-12	1.0150341-12	3.8957470+00	1.7654000+01	1.0189904+01
528000.	8.5092416-12	9.8992485-13	3.8986631+00	1.7632000+01	1.0189904+01
530000.	8.3110810-12	9.6560028-13	3.9015772+00	1.7610000+01	1.0189904+01
532000.	8.1179085-12	9.4186143-13	3.9044892+00	1.7588000+01	1.0189904+01
534000.	7.9295946-12	9.1875064-13	3.9073990+00	1.7566000+01	1.0189904+01
536000.	7.7460036-12	8.9624967-13	3.9103066+00	1.7544000+01	1.0189904+01
538000.	7.5670114-12	8.7434161-13	3.9132121+00	1.7522000+01	1.0189904+01
540000.	7.3924920-12	8.5300953-13	3.9161156+00	1.7500000+01	1.0189904+01
542000.	7.2223247-12	8.3223713-13	3.9190169+00	1.7478000+01	1.0189904+01
544000.	7.0563974-12	8.120929-13	3.9219161+00	1.7456000+01	1.0189904+01
546000.	6.8945945-12	7.9231045-13	3.9248132+00	1.7434000+01	1.0189904+01
548000.	6.7368054-12	7.7312576-13	3.9277082+00	1.7412000+01	1.0189904+01
550000.	6.5829255-12	7.5444116-13	3.9306011+00	1.7390000+01	1.0189904+01
552000.	6.4328474-12	7.3624231-13	3.9334919+00	1.7368000+01	1.0189904+01
554000.	6.2864740-12	7.1851615-13	3.9363804+00	1.7346000+01	1.0189904+01
556000.	6.1437051-12	7.0124933-13	3.9392672+00	1.7324000+01	1.0189904+01
558000.	6.0044461-12	6.8442920-13	3.9421518+00	1.7302000+01	1.0189904+01
560000.	5.8686069-12	6.6804368-13	3.9450344+00	1.7280000+01	1.0189904+01
562000.	5.7360911-12	6.5208008-13	3.9479148+00	1.7258000+01	1.0189904+01
564000.	5.6068174-12	6.3652147-13	3.9507432+00	1.7236000+01	1.0189904+01
566000.	5.4807003-12	6.2137449-13	3.9536695+00	1.7214000+01	1.0189904+01
568000.	5.3576537-12	6.060979-13	3.9565438+00	1.7192000+01	1.0189904+01
570000.	5.2375994-12	5.9222297-13	3.9594159+00	1.7170000+01	1.0189904+01
572000.	5.1204586-12	5.7820361-13	3.9622862+00	1.7148000+01	1.0189904+01
574000.	5.0061561-12	5.6454177-13	3.9651543+00	1.7126000+01	1.0189904+01
576000.	4.8946168-12	5.5122776-13	3.9680204+00	1.7104000+01	1.0189904+01
578000.	4.7857742-12	5.3825206-13	3.9708845+00	1.7082000+01	1.0189904+01
580000.	4.6795519-12	5.2560542-13	3.9737464+00	1.7060000+01	1.0189904+01
582000.	4.5758837-12	5.1327885-13	3.9766065+00	1.7038000+01	1.0189904+01
584000.	4.4747052-12	5.0126389-13	3.9794645+00	1.7016000+01	1.0189904+01
586000.	4.3759516-12	4.8955204-13	3.9823205+00	1.6994000+01	1.0189904+01
588000.	4.2795612-12	4.7813519-13	3.9851744+00	1.6972000+01	1.0189904+01
590000.	4.1854716-12	4.6700523-13	3.9880264+00	1.6950000+01	1.0189904+01
592000.	4.0936252-12	4.5615462-13	3.9904763+00	1.6928000+01	1.0189904+01
594000.	4.0039634-12	4.4557569-13	3.9937243+00	1.6906000+01	1.0189904+01
596000.	3.9164325-12	4.3526144-13	3.9965703+00	1.6884000+01	1.0189904+01
598000.	3.8309760-12	4.2520452-13	3.9994142+00	1.6862000+01	1.0189904+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
600000.	3.68185502-11	1.5062126+03	2.5906500+03	5.1348470-13	7.1176726-05	1.0203506+03
602000.	3.7354832-11	1.5062922+03	2.5928500+03	5.0188839-13	7.1209411-05	1.0207837+03
604000.	3.6543365-11	1.5063697+03	2.5950500+03	4.9056951-13	7.1242082-05	1.0212167+03
606000.	3.5750650-11	1.5064451+03	2.5972500+03	4.7952135-13	7.1274738-05	1.0216495+03
608000.	3.4976224-11	1.5065186+03	2.5994500+03	4.6873697-13	7.1307378-05	1.0220821+03
610000.	3.4219634-11	1.5065900+03	2.6016500+03	4.5820966-13	7.1340003-05	1.0225145+03
612000.	3.3480448-11	1.5066593+03	2.6038500+03	4.4793299-13	7.1372615-05	1.0229468+03
614000.	3.2758237-11	1.5067267+03	2.6060500+03	4.3790559-13	7.1405213-05	1.0233788+03
616000.	3.2152421-11	1.5067919+03	2.6082500+03	4.2810676-13	7.1437798-05	1.0238107+03
618000.	3.1363153-11	1.5068655+03	2.6104500+03	4.1854494-13	7.1470362-05	1.0242424+03
620000.	3.0689468-11	1.5069164+03	2.6126500+03	4.0920967-13	7.1502915-05	1.0246739+03
622000.	3.0031177-11	1.5069756+03	2.6148500+03	4.0009519-13	7.1535454-05	1.0251052+03
624000.	2.9387904-11	1.5070328+03	2.6170500+03	3.9119594-13	7.1567797-05	1.0255363+03
626000.	2.8759307-11	1.5070879+03	2.6192500+03	3.8250685-13	7.1600487-05	1.0259673+03
628000.	2.8145008-11	1.5071409+03	2.6214500+03	3.7402235-13	7.1632982-05	1.0263981+03
630000.	2.7544671-11	1.5071920+03	2.6236600+03	3.6573747-13	7.1665463-05	1.0268287+03
632000.	2.6957963-11	1.5072410+03	2.6258500+03	3.5764726-13	7.1697928-05	1.0272591+03
634000.	2.6384550-11	1.5072880+03	2.6280500+03	3.4974686-13	7.1730380-05	1.0276894+03
636000.	2.57324128-11	1.5073329+03	2.6302500+03	3.4203173-13	7.1762817-05	1.0281194+03
638000.	2.5276369-11	1.5073758+03	2.6324500+03	3.3449707-13	7.1795241-05	1.0285493+03
640000.	2.4740984-11	1.5074166+03	2.6346600+03	3.2713861-13	7.1827649-05	1.0289790+03
642000.	2.4217661-11	1.5074555+03	2.6368500+03	3.1995177-13	7.1860434-05	1.0294085+03
644000.	2.3706130-11	1.5074923+03	2.6390500+03	3.1293260-13	7.1892423-05	1.0298379+03
646000.	2.3206101-11	1.5075270+03	2.6412500+03	3.0607682-13	7.1924787-05	1.0302670+03
648000.	2.2717304-11	1.5075598+03	2.6434500+03	2.9938043-13	7.1957139-05	1.0306960+03
650000.	2.2239467-11	1.5075904+03	2.6456500+03	2.9283955-13	7.1989475-05	1.0311248+03
652000.	2.1772325-11	1.5076191+03	2.6478500+03	2.8645024-13	7.2021798-05	1.0315535+03
654000.	2.1315642-11	1.5076457+03	2.6500500+03	2.8020902-13	7.2054107-05	1.0319819+03
656000.	2.0869155-11	1.5076793+03	2.6522500+03	2.7411208-13	7.2086399-05	1.0324102+03
658000.	2.0432629-11	1.5076928+03	2.6544500+03	2.6815596-13	7.2118679-05	1.0324383+03
660000.	2.0005835-11	1.5077133+03	2.6566500+03	2.6233733-13	7.2150945-05	1.0332662+03
662000.	1.9588535-11	1.5077318+03	2.6588500+03	2.5665272-13	7.2183196-05	1.0336939+03
664000.	1.9180502-11	1.5077482+03	2.6610500+03	2.5109883-13	7.2215433-05	1.0341215+03
666000.	1.8781523-11	1.5077626+03	2.6632500+03	2.4567255-13	7.2247656-05	1.0345489+03
668000.	1.8391388-11	1.5077750+03	2.6654500+03	2.4037080-13	7.2279864-05	1.0349761+03
670000.	1.8009893-11	1.5077853+03	2.6676500+03	2.3519064-13	7.2312059-05	1.0354031+03
672000.	1.7636824-11	1.5077936+03	2.6698500+03	2.3012897-13	7.2344240-05	1.0358300+03
674000.	1.7271986-11	1.5077999+03	2.6720500+03	2.2518293-13	7.2376407-05	1.0362567+03
676000.	1.6915199-11	1.5078041+03	2.6742500+03	2.2034991-13	7.2408558-05	1.0366832+03
678000.	1.6586261-11	1.5078663+03	2.6764500+03	2.1562699-13	7.2440697-05	1.0371095+03

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
600000.	3.7473858-12	4.1538088-13	4.0022562+00	1.6840000+01	1.0189904+01
602000.	3.6658669-12	4.0600010-13	4.0040941+00	1.6826600+01	1.0189904+01
604000.	3.5862325-12	3.9689375-13	4.0059311+00	1.6813200+01	1.0189904+01
606000.	3.5084384-12	3.8790639-13	4.0076744+00	1.6799800+01	1.0189904+01
608000.	3.4324390-12	3.7918243-13	4.0096027+00	1.6786400+01	1.0189904+01
610000.	3.3581900-12	3.7066641-13	4.0114373+00	1.6773000+01	1.0189904+01
612000.	3.2856490-12	3.6235315-13	4.0132710+00	1.6759400+01	1.0189904+01
614000.	3.2147738-12	3.5423749-13	4.0151040+00	1.6746200+01	1.0189904+01
616000.	3.1455272-12	3.4631482-13	4.0169361+00	1.6732800+01	1.0189904+01
618000.	3.0778654-12	3.3857983-13	4.0187673+00	1.6719400+01	1.0189904+01
620000.	3.0117524-12	3.3102811-13	4.0265978+00	1.6706000+01	1.0189904+01
622000.	2.9471501-12	3.2365500-13	4.0224274+00	1.6692600+01	1.0189904+01
624000.	2.8840216-12	3.1645600-13	4.0242563+00	1.6679200+01	1.0189904+01
626000.	2.8223335-12	3.0792700-13	4.0260842+00	1.6665800+01	1.0189904+01
628000.	2.7620484-12	3.0256351-13	4.0279114+00	1.6652400+01	1.0189904+01
630000.	2.7031335-12	2.9586149-13	4.0297378+00	1.6639000+01	1.0189904+01
632000.	2.6455561-12	2.8931696-13	4.0315633+00	1.6625600+01	1.0189904+01
634000.	2.5892834-12	2.8292597-13	4.0333881+00	1.6612200+01	1.0189904+01
636000.	2.5342857-12	2.7668465-13	4.0352120+00	1.6598800+01	1.0189904+01
638000.	2.4805306-12	2.7058973-13	4.0370352+00	1.6585400+01	1.0189904+01
640000.	2.4279899-12	2.6463713-13	4.0388575+00	1.6572000+01	1.0189904+01
642000.	2.3766329-12	2.5882339-13	4.0406790+00	1.6558600+01	1.0189904+01
644000.	2.3264331-12	2.5314526-13	4.0424997+00	1.6545200+01	1.0189904+01
646000.	2.2773621-12	2.4759930-13	4.0443196+00	1.6531800+01	1.0189904+01
648000.	2.2293931-12	2.4218230-13	4.0461387+00	1.6518400+01	1.0189904+01
650000.	2.1825001-12	2.3689109-13	4.047957C+00	1.6505000+01	1.0189904+01
652000.	2.1366566-12	2.3172249-13	4.0497745+00	1.6491600+01	1.0189904+01
654000.	2.0918393-12	2.2667368-13	4.0515912+00	1.6478200+01	1.0189904+01
656000.	2.0480227-12	2.2174159-13	4.053407C+00	1.6464800+01	1.0189904+01
658000.	2.0051837-12	2.1692342-13	4.0552221+00	1.6451400+01	1.0189904+01
660000.	1.9632996-12	2.1221647-13	4.0570364+00	1.6438000+01	1.0189904+01
662000.	1.9223473-12	2.0761793-13	4.0588499+00	1.6424600+01	1.0189904+01
664000.	1.8823045-12	2.0312514-13	4.0606626+00	1.6411200+01	1.0189904+01
666000.	1.8431501-12	1.9873558-13	4.0624744+00	1.6397800+01	1.0189904+01
668000.	1.8048637-12	1.9444675-13	4.0642655+00	1.6384400+01	1.0189904+01
670000.	1.7674252-12	1.9025629-13	4.0660958+00	1.6371000+01	1.0189904+01
672000.	1.7308136-12	1.8616167-13	4.0679054+00	1.6357600+01	1.0189904+01
674000.	1.6950097-12	1.8216060-13	4.0697141+00	1.6344200+01	1.0189904+01
676000.	1.6599960-12	1.7825096-13	4.071522L+00	1.6330800+01	1.0189904+01
678000.	1.6257524-12	1.7443037-13	4.0733292+00	1.6317400+01	1.0189904+01

TABLE II (CONT'D) - VANDENBERG AFB REFERENCE ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE meters	PRESSURE newtons cm ⁻²	KINETIC TEMPERATURE degrees K	MOLECULAR TEMPERATURE degrees K	DENSITY kg m ⁻³	COEFFICIENT OF VISCOSITY newton-sec m ⁻²	SPEED OF SOUND m sec ⁻¹
680000.	1.0625000-11	1.5178064+03	2.6786500+03	2.1101167-13	7.2472822-05	1.0375357+03
682000.	1.05491223-11	1.5078046+03	2.6808500+03	2.0650120-13	7.2504933-05	1.0379617+03
684000.	1.05564766-11	1.5078046+03	2.6830500+03	2.0209314-13	7.25377129-05	1.0383875+03
686000.	1.05245465-11	1.5077947+03	2.6852500+03	1.9778517-13	7.2569112-05	1.0388131+03
688000.	1.04733139-11	1.5077867+03	2.6874500+03	1.9357465-13	7.2601180-05	1.0392385+03
690000.	1.04627644-11	1.5077766+03	2.6896500+03	1.8945949-13	7.2633234-05	1.0396638+03
692000.	1.04328801-11	1.5077646+03	2.6918500+03	1.8543716-13	7.2665275-05	1.0400889+03
694000.	1.04036472-11	1.5077505+03	2.6940500+03	1.8150562-13	7.2697302-05	1.0405139+03
696000.	1.03750504-11	1.5077343+03	2.6962500+03	1.7766268-13	7.2729315-05	1.0409386+03
698000.	1.03470747-11	1.5077162+03	2.6984500+03	1.7390620-13	7.2761313-05	1.0413632+03
700000.	1.03195200-11	1.5076960+03	2.7006500+03	1.7021014-13	7.2793298-05	1.0417876+03

TABLE II (CONT'D) - VANDENBERG AFB REF. ATMOSPHERE (ANNUAL)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
680000.	1.5422623-12	1.7069664-13	4.0751355+00	1.6304000+01	1.0189904+01
682000.	1.5595067-12	1.6704811-13	4.0769411+00	1.6290600+01	1.0189904+01
684000.	1.5274693-12	1.6348224-13	4.0787458+00	1.6277200+01	1.0189904+01
686000.	1.4961344-12	1.5999732-13	4.0805498+00	1.6263800+01	1.0189904+01
688000.	1.4654838-12	1.5659124-13	4.0823531+00	1.6250400+01	1.0189904+01
690000.	1.4355036-12	1.5326231-13	4.0841554+00	1.6237000+01	1.0189904+01
692000.	1.4061763-12	1.5000846-13	4.0859571+00	1.6223600+01	1.0189904+01
694000.	1.3774862-12	1.4682606-13	4.0877980+00	1.6210200+01	1.0189904+01
696000.	1.3494243-12	1.4371934-13	4.0895560+00	1.6196800+01	1.0189904+01
698000.	1.3219700-12	1.4068055-13	4.0913573+00	1.6183400+01	1.0189904+01
700000.	1.2949288-12	1.3769064-13	4.0931559+00	1.6170000+01	1.0189904+01

REFERENCES

1. Smith, O. E., "A Reference Atmosphere for Patrick Air Force Base, Florida (Annual)," NASA Technical Note D-595, March 1961.
2. "Atlantic Missile Range Reference Atmosphere for Cape Kennedy, Florida (Part I)," prepared by Range Reference Atmosphere Committee Meteorological Working Group of the Inter-Range Instrumentation Group, IRIG Document 104-63, Secretariat, Range Commanders Council, Attn: STEWS-ROD-RCC, White Sands Missile Range, New Mexico, April 16, 1963.
3. Smith, O. E. and Don R. Weidner, "A Reference Atmosphere for Patrick Air Force Base, Florida, Annual (1963 Revision)," NASA TM X-53139, NASA-George C. Marshall Space Flight Center, Marshall Space Flight Center, Alabama, September 1964.
4. U.S. Standard Atmosphere, 1962, prepared under sponsorship of National Aeronautics and Space Administration, United States Air Force, and United States Weather Bureau, G.P.O., December 1962.
5. "Pacific Missile Range Reference Atmosphere for Point Arguello, California (Part I)," prepared by Range Reference Atmosphere Committee Meteorological Working Group of the Inter-Range Instrumentation Group, IRIG Document 104-63, Secretariat, Range Commanders Council, White Sands Missile Range, New Mexico, August 1965.
6. Spivey, S. A., "A Preliminary Reference Atmosphere for Point Arguello, California from 25 to 90 km Altitude," TM 54/50-90, LMSC-HREC A784890, Lockheed Missiles and Space Company, Huntsville, Alabama, November 1967.
7. List, R., editor, Smithsonian Meteorological Tables, Sixth Revised Edition, Smithsonian Institution, 1951.

APPROVAL

NASA TM X-64590

A REFERENCE ATMOSPHERE FOR VANDENBERG AFB, CALIFORNIA,
ANNUAL (1971 VERSION)

by E. A. Carter and S. C. Brown

The information in this report has been reviewed for security classification. Review of any information concerning Department of Defense or Atomic Energy Commission programs has been made by the MSFC Security Classification Officer. This report, in its entirety, has been determined to be unclassified.

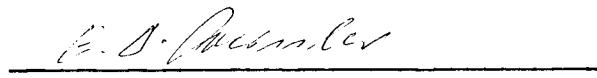
This document has also been reviewed and approved for technical accuracy.



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